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ABSTRACT

This report summarizes an investigation of the relationship between properties of organizational structure and certain personality traits of organizational members, and how the resulting interaction between these two factors relates to the organizational climate of elementary schools. Two hundred and ninety-six southern California teachers responded to three questionnaires which provided measures of (1) the organizational climate of schools as measured by the Organizational Climate Description Questionnaire developed by Halpin and Croft; (2) the personality characteristics of the respondents as measured by Cattell and Eber's Sixteen Personality Factor Questionnaire; and (3) the schools' structural properties in terms of the degree of formalization, centralization, complexity, and autonomy as perceived by the respondent. Results indicated that teachers' perceptions of organizational climate may be seen as functions of the interplay between teachers' personalities and the structure of the organization in which the individual functions, thus supporting and extending the Getzels-Guba Social System Theory. Tables, copies of questionnaires, and a bibliography are included. (Author)

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ORGANIZATIONAL STRUCTURE, TEACHER PERSONALITY CHARACTERISTICS AND THEIR RELATIONSHIP TO ORGANIZATIONAL CLIMATE

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April 1970

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SUMMARY

The purpose of this study was to investigate the relationship between the properties of organizational structure and certain personality characteristics of organizational members, and how the resulting interaction between these two factors related to the organizational climate of elementary schools.

A sample of two hundred ninety-six teachers was drawn from fifteen elementary schools located in two unified school districts in Southern California. These elementary teachers responded to three questionnaires which provided measures of:

1. The organizational climate of schools as measured by the Organizational Climate Description Questionnaire developed by Halpin and Croft.

2. The personality characteristics of the respondents as measured by Cattell and Eber's Sixteen Personality Factor Questionnaire.

3. The schools' structural properties in terms of the degree of formalization (rules and regulations), centralization (decision-making hierarchy), complexity (specialization), and autonomy (self-determination) as perceived by the respondent.

Using Principal Component Analysis, the personality and structural property scores were intercorrelated, resulting in a twenty by twenty correlation matrix. The matrix was analyzed and a complete set of twenty principal components was obtained. On the basis of the loadings it was possible to identify independent components of variance associated with the structural components, the personality components, and those components demonstrating an interaction between the structural property and personality variables.

The relationship between the resulting components and the climate profile subtests which represented the teachers' perceptions of organizational climate was determined by subjecting the set of component scores and the set of climate profile scores to Canonical Correlation Analysis.

The results of Principal Component Analysis identified independent sources of variance in components comprised of primarily personality variables, and also to components containing contributions from both the personality and structural property sets of variables.

In the Canonical Correlation Analysis between the twenty components and the eight subtests of the organizational climate profile, the first two canonical correlations proved to be significant beyond the .002 level. These two canonical functions revealed seven

components which were closely related to the climate profile subtests. Five of the seven components were comprised of both personality and structural property variables such as dependent, conservative, concrete, and practical personality traits sharing the variance within a component with highly formalized and highly centralized structural property characteristics.

The findings indicated that personality in interaction with perceived structure was related to teachers' perceptions of organizational climate more closely than either personality or perceived structure, taken separately. Thus, teachers' perceptions of organizational climate may be viewed as a function of the interplay between a teacher's personality and the structure of the organization in which the individual functions.

The results of this study supported the Getzels-Guba Social System Theory and extended the theory by operationalizing the nomothetic dimension as organizational structure.

INTRODUCTION

Contemporary Western society is primarily an organizational society.[1] Etzioni reminds us that we are born in organizations, educated by organizations, work for organizations, spend our leisure time in organizations, die in organizations and are buried by an organization.[2] Our society depends heavily upon organizations as the most rational and efficient means of coordinating human activities and material resources towards the achievement of specific goals. Public schools are no exception.

In reviewing the literature, one finds no dearth of studies regarding organizations in terms of their structures--and considerable attention has been focused upon human behavior within the setting of organizational structures. However, as Bidwell points out, there is an obvious gap in the field of education regarding research related to the organizational structure of schools and the resulting interplay between organizational structure and the professional behavior of the staff.[3]

The purpose of this study was to investigate the structural properties of elementary schools; certain personality characteristics of teachers; and to determine whether or not the interaction of these two measures was related to teachers' perception of the organizational climate of their respective schools.

Background of the Problem

The Bureaucratic and Structural Dimension of Public Schools

There is probably no necessity for presenting a case for considering public schools as bureaucratic organizations. Bureaucracy is an integral part of the anatomy of the organizational blueprint of most public schools, and these institutions, by design, are adopting several organizational properties into their structural domains which can be readily identified both theoretically and empirically. As a

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1 R. Presthus, The Organizational Society (New York: Vintage Books, 1965).

2 A. Etzioni, Modern Organizations (New Jersey: Prentice-Hall, Inc., 1964), pp. 1-3.

3 C. E. Bidwell, "The School as a Formal Organization," found in J. G. March, ed., Handbook of Organization (Chicago: Rand McNally & Co., 1965).

point of departure, students of organizational theory generally accept Weber's[4] construct of the bureaucratic form which includes the following characteristics:

1. "A specific sphere of competence."[5] This focuses upon a systematic division of labor which defines the activities which the incumbent must perform and provides the necessary authority for the incumbent to perform these specified functions. The assignment of an incumbent to a specific role is based upon expertise and specialization.

2. "A continuous organization of official functions bound by rules."[6] Formally established systems of rules and regulations governs all official decisions and actions insuring uniformity and continuity of operations.

3. "The organization of offices follows the principle of hierarchy; that is, each lower office is under the control and supervision of a higher one."[7] Each member of the organization is held accountable for his actions and is also responsible for the behavior of his subordinates.

4. "The rules which regulate the conduct of an office may be technical rules or norms. In both cases, if their application is to be fully rational, specialized training is necessary. It is thus normally true that only a person

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[4] Weber's classic theory may be found in two volumes: M. Weber, The Theory of Social and Economic Organizations (Translated by A. M. Henderson and T. Parsons, Glencoe, Illinois: The Free Press, 1947) and M. Weber, Essays in Sociology (Translated by H. H. Gerthe and C. W. Mills, New York: Oxford University Press, 1946).

[5] These five characteristics of bureaucracy have been adequately interpreted by R. K. Merton, Social Theory and Social Structure (New York: The Free Press of Glencoe, 1957), P. M. Blau, The Dynamics of Bureaucracy in Modern Society (New York: Random House, 1956), P. M. Blau, The Dynamics of Bureaucracy (Chicago: The University of Chicago Press, 1955), A. W. Gouldner, Patterns of Industrial Bureaucracy (New York: The Free Press of Glencoe, 1954) and more recently P. M. Blau and R. W. Scott, Formal Organizations (San Francisco: Chandler Publishing Co., 1962).

[6] Ibid.

[7] Ibid.

who has demonstrated an adequate technical training is qualified to be a member of the administrative staff . . ."[8] Therefore, employment by an organization constitutes a career through technical qualifications. Officials are appointed on the basis of impersonal, competitive examinations or certificates that demonstrate the educational attainment required for the position, or both. After a period of probation, officials qualify for tenure of position and are protected from arbitrary dismissal. Promotion is usually based on seniority and achievement, and incremental salaries and pensions are an integral feature of this theory.

5. Impartiality of superordinate behavior. "It is a matter of principle that the members of the administrative staff should be completely separated from ownership of the means of production or administration. . . . Officials are subject to authority only with respect to their impersonal official obligations. . . . Officials are expected to assume an impersonal orientation in their contacts with other officials and clients . . . disregarding all personal considerations and maintaining complete emotional detachment."[9]

More recently, other students of organizational phenomena have attempted to distinguish structural properties within complex organizations with more empirical clarity. Simon developed a theoretical framework for the analysis of formal organizations on the basis of viewing organizations as decision-making structures.[10] He characterizes his viewpoint as follows:

> "What is a scientifically relevant description of an organization? It is a description that, so far as possible, designates for each person in the organization what decisions that person makes, and the influence to which he is subject in making each of these decisions."[11]

Hickson offers the concept of "role specification" as a fundamental element of organizational structure.[12] He suggests that the specificity of role prescription (and its obverse, the range of legitimate

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[8] Ibid.

[9] Ibid.

[10] H. A. Simon, Administrative Behavior, 2nd ed. (New York: The MacMillan Co., 1957).

[11] Ibid., p. 37.

[12] D. J. Hickson, "A Convergence in Organization Theory," Administrative Science Quarterly, Vol. 31 (September, 1966).

discretion of role incumbents) is a means of measuring variations within the structural dimension. Talcott Parsons provides an interesting conception in the analysis of formal organizations through the application of his general theoretical framework for the study of social systems to organizations.[13] However, critics of the scheme charge that his theoretical framework is so abstract that it fails to generate any workable propositions. Blau, et al., analyzed the interrelations among four structural attributes of bureaucracy and their implications for organizational operations; these were identified as (1) division of labor, (2) professionalization, (3) hierarchy of authority, and (4) administrative staff of clerks.[14] Golembiewski investigated the behavior patterns of organizational participants within a formal structure and presents evidence that supports the growing contention that traditional "live-staff" relations are increasingly inadequate in contemporary organizations. His contention is similar to Bennis' who predicts the demise of bureaucratic structure and foresees "Adaptive, problem solving, temporary systems of diverse specialists linked together by coordinating and task evaluating executive specialists in an organic flux"[15] replacing present bureaucratic systems. Hage[16] and later, Hage and Aiken,[17] in an attempt to explore the relationships between centralization and the dimensions of social structures inherent in organizations have formulated several empirically useful concepts of organizational structures. Three of these structural properties which are germane to this study include formalization, centralization and complexity. These three variables are theoretically sound in that they represent a unified conceptionalization of the more frequently discussed structural characteristics of organizations as explicated by several classical organizational theorists referenced earlier in the chapter.

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13 T. Parsons, Structures and Process in Modern Societies (Glencoe, Illinois: The Free Press, 1960), pp. 19-96.

14 P. M. Blau, et al., "The Structure of Small Bureaucracies," American Sociological Review, Vol. 31 (February, 1966).

15 W. G. Bennis, "The Coming Death of Bureaucracy," Think (November-December, 1966).

16 J. Hage, "An Axiomatic Theory of Organizations," Administrative Science Quarterly, Vol. 10 (December, 1965).

17 J. Hage and M. Aiken, "Relationships of Centralization to Other Structural Properties," Administrative Science Quarterly, Vol. 12 (June, 1967).

A review of the organizational design represented within typical public schools reflects a rapid growth of the structural characteristics discussed above. Generalists in education, specifically in the teacher core, are very much on the decline. The atomic age has heralded an era of "knowledge explosion" contributing towards increased demands upon public institutions to assure more diverse and specialized functions which inevitably lead to a higher general level of training and more complex educational systems.

The degree of specialization, the diversity of functions, and the increased size of school systems have resulted in more highly stratified levels of hierarchical control.[18] Organizational charts of typical systems reflect a chain of command defining function, responsibility, and authority for each succeeding supervisory level. The trend has been an increase in administrative stratification that is proportional to the expansion of educational facilities and services. The power distribution in terms of the proportion of individuals who participate in decision-making, or the degree of latitude allowed in which decisions are made, has become more centralized. Role specification or job definition is generally more specific and standardized, and the range of variation or the degree of individual discretion allowed each role incumbent has become limited and constrained. Thus, the bureaucratic characteristics of school systems and the extensiveness of their organizational structure seems apparent.

The Problem of the Professional in the Structural Dimension

As increasing numbers of professionals seek careers in formal organizations, social scientists are directing more attention towards examining the conflicts between the demands of the organization and those of professional standards. Blau and Scott[19] identify three basic differences which contribute to the growing conflict. First, the professional is bound by professional ethics to represent the interests of his clients rather than the organization; second, the professional's authority is rooted in his technical expertness rather than on a legal contract backed by formal sanctions; and third, the professional's decisions are governed by internalized professional standards rather than compliance with directives from superiors. They indicate that "studies of professionals or semi-professionals in formal organizations have consistently found

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18 H. J. Hartley, "Bureaucracy, Rationality, and Educational Innovation," The Clearing House, Vol. 40, Number 1 (September, 1965), pp. 3-7.

19 Blau and Scott, Formal Organizations, pp. 244-247.

that the conflict between bureaucratic and professional orientation is a fundamental issue."[20] Willower refers to the growing literature on the emerging educational professionals which "highlights the potential conflict between bureaucratic . . . or organizational demands on the one hand and professional ones on the other."[21] Miller's study which investigated conflict between professionals and their employing organizations found that alienation from work is primarily "a consequence of the professional-bureaucratic dilemma . . ."[22] Bidwell suggests that organizational structure of schools may vary in accordance with the type of teacher recruited. Systems which are highly bureaucratic and consequently lean heavily upon "administration by rules" will alienate the professional-oriented teacher who desires autonomy and collegial forms of control, whereas, the teacher whose professional orientation is weak is more likely to respond favorably to an organizational structure that administers by rules, defining the teacher's role in explicit terms.[23]

The Problem of the Structure-Personality Dimension and Organizational Climate

The major thesis of this study proposed that organizational climate was affected by the degree of conflict that develops when personality characteristics of organizational members are not congruent with the demands and expectations of a particular organizational structure. This approach is similar to Argyris' conceptualization of organizational climate in which he based his model upon a study of interpersonal relations in a bank.[24] He interrelated three systems of variables: the formal structure of the organization evidenced by the rules, regulations, procedures and policies; personality traits of the organizational members reflecting their individual needs,

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20 Ibid., p. 246.

21 D. Willower, "The School as a Social System," Educational Administration Quarterly, Vol. 1 (Autumn, 1965).

22 G. A. Miller, "Professionals in Bureaucracy: Alienation Among Industrial Scientists and Engineers," American Sociological Review, Vol. 31, No. 6 (December, 1966), pp. 775-768.

23 Bidwell, "The School as a Formal Organization."

24 C. Argyris, "Some Problems in Conceptualizing Organizational Climate: A Case Study of a Bank," Administrative Science Quarterly, Vol. 2 (June-March, 1957-58), pp. 501-520.

values and abilities; and the variables associated with the individual's abilities to accommodate his ends with those of the organization. It was Argyris' contention that the interaction of these three systems of variables provide a measure of organizational climate. Golembiewski reflected a similar concern regarding the necessity for research that analyzed organizations by considering as many of the interacting variables as possible, simultaneously. He criticizes the generally accepted notion that the personality characteristics of organizational members are homogeneous. "Men are not homogeneous in critical senses; the heterogeneity of individual personality characteristics outstrips the capabilities of nomolithic structural arrangements and managerial techniques generated by the traditional theories of organization; and both individual and organization pay a price when man is bent in ways he has not grown."[25] Merton expresses similar concerns.[26] Recognizing the trend toward increasing bureaucratization in Western society, he encourages further empirical studies of the interaction of bureaucracy and personality in order that we may increase our understanding of social structure.

In 1963, Halpin and Croft developed the Organizational Climate Descriptive Questionnaire (hereinafter reported as the OCDQ).[27] Halpin's objective was to dimensionalize the behaviors of organizational members which define the Organizational Climate of elementary schools and he identified empirically six distinct Organizational Climates. The six climates were arrayed along a continuum defined as Open at one end and Closed at the other. The Open Climate characterizes an organization that is "moving." Teachers obtain considerable job satisfaction, work well together and accomplish their tasks. The Closed Climate is the converse of the open situation. Teachers obtain little satisfaction to either task-achievement or social-needs, nor do they work well together. Halpin suggests that "the concept of openness versus closedness in organizational climates is directly

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25 R. T. Golembiewski, "Personality and Organization Structure: Staff Models and Behavioral Patterns," Academy of Management Journal, Vol. 9 (September, 1966).

26 R. K. Merton, "Bureaucratic Structure and Personality," found in C. Kluckhohn, et al., ed., Personality in Nature, Society, and Culture (New York: Alfred A. Knopf, 1967), pp. 376-385.

27 A. W. Halpin and D. Croft, The Organizational Climate of Schools (Chicago: Midwest Administration Center, University of Chicago, 1963).

related to similar concepts about the openness or closedness of an individual's personality."[28] He further hypothesizes that perhaps the personality characteristics of teachers predisposes them to the modes of behavior that characterize climate. Guba, Jackson and Bidwell investigated the personalities of teacher-trainees and experienced teachers and found characteristics that seem to fit the cultural stereotype of the teacher as sexually impotent, obsequious, externally patient, painstakingly demanding and socially inept.[29] Halpin suggests that candidates who select a teaching career and who reflect characteristics similar to the modal types found by Guba, Jackson and Bidwell are not those who are likely to facilitate openness in the Organizational Climate of their schools.[30]

Statement of the Problem

Although considerable research has been conducted in the investigation of organizational structure, personality traits of organizational members, and organizational climate, little attention has been focused upon the interplay between measures of organizational structure and measures of teacher personality traits, and, more particularly, little has been reported on the resultant effect of the interaction between these two measures upon organizational climate. Since the introduction of the OCDQ in 1963, well over one hundred studies were conducted, attempting to relate organizational climate to formal organizational variables, informal variables and personality variables. However, this investigator failed to discover studies which considered Organizational Climate within the context of simultaneously existing, mutually interacting variables. As both Argyris[31] and Halpin[32] have cautioned, when investigating human behavior in organizations, the variables under study do not exist as neat, separate compartments. Rather, they are interactive and must be considered simultaneously. Argyris contends that organizational

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28 A. W. Halpin, Theory and Research in Administration (New York: The Macmillan Co., 1966), p. 233.

29 E. G. Guba, et al., "Occupational Choice and the Teaching Career," Educational Research Bulletin, 38, No. 1 (January, 1959), pp. 1-13.

30 Halpin, Theory and Research in Administration, pp. 234-236.

31 Argyris, "Some Problems in Conceptualizing Organizational Climate: A Case Study of a Bank," p. 502.

32 Halpin, Theory and Research in Administration, p. 143.

structure and the behavior of the participants "both go hand in hand" and should not be treated as separate entities.[33]

In this study, it is asserted that a teacher's perception of climate is a function of the degree of compatibility that exists between his own need dispositions and the role expectation specified by the organization. If the teacher's personality is compatible with the role defined by the organization, the teacher will perceive the climate as being open. Conversely, if the teacher perceives the structural setting of the school as conflicting with his own need disposition, he will perceive the climate as closed.

Significance of the Study

Halpin and Croft have provided social scientists with a very useful instrument that can contribute significantly towards a better understanding of teacher behavior in organizational settings. Their conceptualization of Organizational Climate and the resulting OCDQ which they developed to measure the Organizational Climate of elementary schools has generated hundreds of subsequent studies in which researchers have sought to identify the host of variables related to climate.

This particular study attempts to add to the understanding of the concept of climate. The major theoretical assumptions underlying this concept--in terms of the general factors comprising this domain--were accepted. However, this investigation provided evidence which suggested that climate cannot best be described in terms of the "main effects" of the variables associated with the three general factors (Social Needs, Esprit, and Social Control) identified by Halpin and Croft.

Rather, the results of this study indicated that an "interaction effect" is observable among the variables concerned and the interaction among the variables is more closely related to the climate phenomenon than the main effects of the sets of variables, taken separately. This being the case, serious questions can be raised regarding Halpin and Croft's definitions of the types of Organizational Climates measured by the OCDQ. For example, the Open Climate is described in terms which connote characteristics indicative of a healthy organizational setting. This definition is not supported by the findings of this study. According to the evidence presented in subsequent chapters, the argument can be made that Organizational Climate, as measured by the OCDQ, describes the resultant behavior of organizational participants on the basis of the

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[33] C. Argyris, Interpersonal Competence and Organizational Effectiveness (Homewood, Illinois: Richard O. Irwin, Inc., 1962).

degree of compatibility that exists between an individual's needs disposition and the organizational structure within which these needs are met--or not met. These findings are discussed in greater detail in the following chapters.

An increased understanding of teacher behavior in an organizational setting is necessary, especially if educators are to bring about necessary improvements in public education. This consideration is especially germane in an era that is witnessing major changes in the structure of educational organizations in order to accommodate an emerging professional body of men and women who are assuming more diverse and specialized functions. Educators entertaining the adoption of innovative practices, i.e., task force techniques, computerized modular programs, team teaching, and so forth, which invariably effect changes in the existing structure of schools, cannot ignore the resulting interaction between the structure of the organization and the need dispositions of teachers who must function within the organizational setting. Also, considerable concern has been voiced among many educators and social scientists as well, regarding the anticipated incompatibility between an emerging professional body that must function in a highly formulistic institutional setting. The success or failure of any educational program, be it innovative or conventional, may be greatly dependent upon the degree of compatibility that exists between the organizational structure and teacher personality traits. A greater understanding of this relationship also has implications that bear upon the recruitment, selection and training of teachers who must function within specified structural settings.

THEORETICAL FRAMEWORK AND RESEARCH

Organizational Climate

In his review of modern organizations, Etzioni describes human behavior in organizational settings within the context of three distinct traditions. The first of these traditions is the "Classical" or "Scientific Management" approach.[34] Organizational theorists embracing this approach viewed the organizational participant as an individual who was motivated primarily by economic rewards and if these rewards were closely related to his work effort, he would respond to organizational demands to the limit of his potential. Within the industrial setting, the organizational participant was received as nothing more than an extension of the machine. His organizational role was clearly defined in a formal setting which was characterized by a hierarchy of control and a well established division of labor. According to Etzioni,[35] the "Classical" or "Scientific Management" approach is best presented in the works of Gulick and Urwick,[36] and Fredrick Taylor.[37]

Following the Classical Theory and, in part, as a reaction to the school of Scientific Management, the Human Relations approach gained prominence. Theorists shifted their emphasis from the formal structure of organizations and focused their attention upon the individual. The concept of an informal organization emerged and emphasis centered upon the needs or organizational members that went beyond economic rewards. Several classic studies conducted by social scientists resulted in findings which contributed towards the view that the organizational member is also motivated by non-economic rewards;[38] and social capacity;[39] and that he responds to the formal structure as a member of a group rather

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34 A. Etzioni, Modern Organizations (New Jersey: Prentice Hall, Inc., 1964).

35 Ibid.

36 L. Gulick and L. Urwick, Papers on the Science of Administration (New York: Institute of Public Administration, Columbia University, 1937).

37 F. W. Taylor, Scientific Management (New York: Harper, 1911).

38 F. J. Roethlisberger and W. J. Dickson, Management and the Worker (Cambridge: Harvard University Press, 1939).

39 Ibid.

than as an individual.[40] The rationality of an organization was directly related to the degree that the personal needs of the organizational member were compatible with the role expectations defined by the formal structure.

These two concepts which evolved from the "Classical" and "Human Relations" schools of thought were diametrically opposed in terms of their view of human behavior in an organizational setting. The school of "Scientific Management" proposed that an individual would derive the greatest satisfaction in an organization that was most efficient and economically rewarding whereas the "Human Relations" approach proposed that the most efficient organization would result when organizational structure was related to the social needs of its members. These two schools of thought represented both extremes in the arc of a pendulum. Although both recognized the need for balance between the formal organization and the needs of the organizational members, one focused attention primarily upon formal structure as the means for achieving compatibility by assuming that man was foremost concerned with economic benefits, and the other focused upon the informal organization contending that satisfying interpersonal relationships would effect the desired balance.

Critics of these two approaches suggested that neither provided a complete view of an organization. Etzioni identifies the tradition which emerged as the "Structuralist Tradition" and their approach is primarily a synthesis of the "Classical" and "Human Relations" approaches.[41] According to Etzioni, the structuralists were the first to fully recognize the organizational delemma:

> The inevitable strains--which can be reduced but not eliminated--between organizational needs and personal needs; between rationality and non-rationality; between discipline and autonomy; between formal and informal relations; between management and workers; or, more generically, between ranks and divisions.[42]

The structuralists were more global in their assessment of human behavior in organizations. They provide a more complete view where-in the organization is seen as a complex social organization in

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40 K. Lewin, "Group Decision and Social Change," found in G. E. Swanson, et al., Readings in Social Psychology, (New York: Holt, 1952).

41 Etzioni, Modern Organizations.

42 Ibid., p. 41.

which many groups interact. The organizational behavior of a participant then, is the end product of a complex system of "simultaneously existing, multilevel, mutually interacting variables."[43] The observed behavior reflects the degree to which the individual is able to adjust to the conflict that exists between formal and informal relations, subordinate and superordinate, organizational needs and personal needs, rationality and non-rationality, discipline and autonomy; and ranks and divisions. Argyris defines this level of analysis of organizational behavior as reflecting the organizational climate of an organization.[44] His conceptualization of climate is that organizational behavior can be defined on the basis of the ability of an individual to accommodate to the organization in terms of considering the interrelationships occurring among the dimensions of formal organizational structures, personality factors of the individual concerned and the informal variables related to the participants' attempts to adapt to the formal organization. This conceptualization is similar to Lonsdale's who defines organizational climate as "the global assessment of the interaction between the task-achievement dimension and the needs-satisfaction dimension within the organization, or, in other words, of the extent of the task-needs integration."[45]

Halpin and Croft "mapped" the domain of organizational climate empirically and identified and described its dimensions.[46] This was accomplished by an analysis of the climate of seventy-one elementary schools selected from six different regions in the United States. The teachers and principals of these schools responded to a sixty-four item questionnaire and the item responses were assigned to eight subtests which were then delineated by factor-analytic methods. Four of the subtests pertained to behavioral characteristics of the faculty group as a group and the remaining four to the behavioral characteristics of the principal as a leader. From these scores a profile was constructed for each

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43 C. Argyris, "Some Problems in Conceptualizing Organizational Climate: A Case Study of a Bank," Administrative Science Quarterly, Vol. 2 (June-March, 1957-58), p. 501.

44 Ibid. pp. 502-503.

45 R. C. Lonsdale, "Maintaining the Organization in Dynamic Equilibrium" found in D. Griffiths, ed., Behavioral Science and Educational Administration, 63rd Yearbook of the NSSE, Part II (Chicago: University of Chicago Press, 1964), p. 166.

46 A. W. Halpin, Theory and Research in Administration (New York: The Macmillan Co., 1966).

school depicting the school's Organizational Climate.

Halpin attributes the major impetus for this research to his awareness of differences among schools and he describes this awareness in terms of a "feel."[47] Visitors to schools are able to sense the climate of a school on the basis of their perceptions of the behavior of the staff. In some schools, the staff appears to be enthusiastic, confident and purposeful while in others they appear to be "going through the motions." Each school appears to have a personality of its own. This observation led to the research which focused upon Organizational Climate as a discrete and legitimate level of analysis having different properties from the formal, the personality, and the informal levels of analyzing organizations.

For the purpose of this study, Wiggins' definition of the concept of organizational climate is most adequate. He states that:

> Conceptually, organizational climate is that state of the organization which results from the interaction that takes place between organizational functionaries as they fulfill their prescribed roles while satisfying their individual needs.[48]

In this study the organizational functionary is the elementary teacher and the OCDQ[49] will be used to describe the organizational behavior of elementary teachers.

Structural Properties

As indicated earlier in the Introduction, schools are complex social organizations comprised of persons in interaction who perform a number of different functions in a formal setting and structural characteristics inherent in formal organizations are identifiable in the organizational design of schools. The literature abounds with research findings based upon measures of structural characteristics of organizations derived from theoretical constructs of organizational

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[47] Ibid., p. 131.

[48] T. W. Wiggins, Leadership Behavior Characteristics of Elementary Principals and Organizational Climate (Unpublished dissertation, Claremont Graduate School, 1968), p. 20.

[49] A. W. Halpin and D. Croft, The Organizational Climate of Schools (Chicago Midwest Administration Center, University of Chicago, 1963).

theorists who have investigated the structural properties of formal organizations other than schools. However, relatively little is reported regarding research related to organizational structure of schools. Moeller,[50] in investigating the organizational complexity of schools and its human antecedents, focused upon the concept of bureaucracy as a means for identifying a number of interrelated organizational dimensions which might be found in schools in company with various resulting effects upon teachers. In his search of the literature, he failed to discover a suitable measure of bureaucratization that could be applied to schools and found it necessary to construct an instrument based upon the Weberian model of bureaucratic organization. His findings indicated that teachers' sense of power was not diminished in highly bureaucratic settings, but rather was heightened because of the rationality and predictability of bureaucratic systems. Hartley,[51] in investigating the teachers' perceptions of the degree of bureaucratization of their schools found that these perceptions did not serve as predictors of teacher satisfaction, effectiveness, or conformity. Bishop[52] investigated the relationship between the bureaucratic structure of schools and adoption of educational innovation and the findings indicated a direct relationship between the degree of bureaucracy and the extent to which innovative practices were adopted.

The relatively few studies which were conducted in educational organizations viewed structural properties primarily within the context of variations of the Weberian concept of bureaucracy, stressing the structural elements and focusing on very narrow segments of experience. As Willower[53] cautions, when the organizational structure of schools is investigated in terms of the bureaucratic model, mitigating factors are often ignored. He offers the example that in comparative studies, the larger school may tend to be more bureaucratic and for a variety of reasons, more likely to be staffed by

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50 G. H. Moeller, "Bureaucracy and Teachers' Sense of Power," The School Review, Vol. 72, No. 2 (Summer, 1964), pp. 137-157.

51 H. J. Hartley, "Bureaucracy and Local-Cosmopolitan Orientation Examined with Selected Criterion Variables," (Unpublished doctoral dissertation, Pennsylvania State University, 1964).

52 L. K. Bishop, "Bureaucracy and the Adoption of Educational Innovation" (Unpublished dissertation, Claremont Graduate School, 1966).

53 D. J. Willower, "Hypotheses on the School as a Social System," Educational Administration Quarterly, Vol. 1, No. 3 (Autumn, 1965), pp. 40-51.

better trained administrators and teachers. Such personnel may function to compensate for the negative consequences of certain dysfunctional aspects of a bureaucratized organization. Therefore, Willower suggests that in the investigation of a dimension of an organization, the researcher should concern himself with as many factors as possible which may be related to the dimension under study such as personality factors and other unique environmental factors.

Similar criticisms have been voiced by a growing number of social scientists concerning the use of the Weberian Bureaucratic Model as a conceptual tool for organizational analysis. Several recognized organizational theorists point out that the Weberian construct requires modification because of its inability to rationally conceptualize complex organizational phenomena. This imperfection in the model reduces its usefulness in that it fails to recognize the internal stresses and strains within the formal setting. Merton[54] discusses these imperfections in terms of Veblen's concept of "trained incapacity," Dewey's concerns with "occupational psychosis," and Warnotte's view of "professional deformation." These three notions concern themselves with the inadequacy of formal structures to provide for flexibility. Organizational participants who are trained to develop and apply specific skills demanded by job specifications adopt measures in keeping with their past training and as a result, under changed conditions requiring different actions, they fail to respond appropriately.[55] A conditioning effect occurs, reducing the ability of one individual to remain flexible. Merton criticizes the Weberian model for its almost exclusive emphasis upon what the bureaucratic structure achieves in terms of precision, reliability and efficiency, postulating that the same structure should be examined from the perspective of organizational ambivalence. Etzioni[56] raises questions regarding the inadequacies of the Weberian concepts of power, sanctions, legitimation and rationality. He suggests that the most important structural dilemma is the strain imposed upon an organization by the use of knowledge and increased degrees of professionalization and it is in this respect that the traditional concept of bureaucratic structure is least adequate in its accommodation. Similar concerns

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54 R. K. Merton, "Bureaucratic Structure and Personality," found in A. Etzioni, ed., Complex Organizations: A Sociological Reader (New York: Holt, Rinehart and Winston, 1961), pp. 48-61.

55 For additional discussion on these concepts, see K. Burke, Permanence and Change (New York: New Republic, 1935).

56 Etzioni, Modern Organizations:

are raised by Blau and Scott,[57] Bidwell,[58] and Willower[59] among others. Although Blau tends to support the Weberian model in his earlier works, he has challenged the concept of the rational, impartial adherence to rules and regulations imposed by bureaucratic theory and offers the concept of Strategic Leniency.[60] He indicates that superordinates who overlook minor infractions of some of the rules and regulations governing subordinate behavior enhanced the rapport between superordinates and subordinates and this approach may prove useful at a later date when demands for more rigid control are placed upon a subordinate for the achievement of a specific organizational goal. Bureaucratic dysfunctionalism has also been discussed by Gouldner[61] and Selznick[62] in terms of unanticipated consequences.

As discussed earlier in the Introduction, more recent students of organizational phenomena have modified the Weberian construct in order to distinguish structural properties within complex organizations with more empirical clarity. Hage,[63] and later Hage and Aiken,[64] formulated several useful concepts that are germane to the study undertaken by this investigation. Drawing upon the

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57 P. M. Blau and R. W. Scott, Formal Organizations (San Francisco: Chandler Publishing Co., 1962).

58 C. E. Bidwell, "The School as a Formal Organization," found in J. G. March, ed., Handbook of Organizations (Chicago: Rand McNally & Co., 1965).

59 Willower, "Hypotheses on the School as a Social System."

60 P. M. Blau, The Dynamics of Bureaucracy, (Chicago, Illinois: The University of Chicago Press, 1955), p. 70.

61 J. G. March and H. A. Simon, Organizations (New York: John Wiley and Sons, Inc., 1963), pp. 40-47.

62 Ibid.

63 J. Hage, "An Axiomatic Theory of Organizations," Administrative Science Quarterly, Vol. 10 (December, 1965), pp. 289-320.

64 J. Hage and M. Aiken, "Relationship of Centralization to Other Structural Properties," Administrative Science Quarterly, Vol. 12 (December, 1965), pp. 72-92.

theoretical writings of Weber, Barnard and Thompson,[65] Hage developed an axiomatic theory of ortanizations based upon formal characteristics of organizations. The rationale for limiting his theory to formal characteristics was described in terms of the following advantages:

1. Formal characteristics can both differentiate between organizations with similar objectives and also indicate similarities between organizations with different objectives.

2. Formal characteristics are not time specific or culturally bounded.

3. Formal characteristics are useful in studying organizational evolution because they are independent of time and culture.

Hage identifies four distinct properties which are major characteristics of formal organizations that are theoretically justifiable. These are as follows:

1. Formalization - This property refers to the degree of standardization in an organization and the extensiveness of the formal rules and regulations.

2. Centralization - This property is defined by the decision-making dimension or the hierarchy of authority.

3. Complexity - This property is identified by the occupational specialties included in an organization, the length of training required and the extensiveness of professional involvement.

4. Stratification - This property reflects the status system of the organization in terms of the difference in rewards.

Hage's conceptualization draws heavily upon the Weberian model of bureaucracy. The very essence of the model specifies a hierarchy of authority and clearly defined rules and regulations governing the formal duties of the organizational participants. Also, Weber's concept of a bureaucratic career is based upon specialized training, technical qualifications and promotions relative to seniority and achievement. These concepts are all evidenced in Hage's four major

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65 The specific works were: M. Weber, The Theory and Economic Organization, translated by T. Parsons and M. Henderson (Glencoe, Illinois: The Free Press, 1947); C. Barnard, "Functions and Pathology of Status Systems in Formal Organizations," in W. F. Whyte, ed., Industry and Society (New York: McGraw Hill, 1964); and V. Thompson, Modern Organization (New York: Alfred Knopf, 1961).

characteristics. Hage suggests that these four characteristics are empirically useful in studying the functional strains in an organization as discussed in the writings of Parsons, Bales and their associates[66] or the concept of organizational dilemma as described by Blau and Scott.[67] The inclusion of decision-making is supported by Crozier's view in which he states that the key to organizational analysis is the study of the distribution of power and this is evidenced in the decision-making dimension of organizations.[68] Barnard,[69] Blau and Scott,[70] Thompson[71] describe the importance of the status system in terms of its effect upon the adaptiveness of an organization, and the morale of the participants. Gouldner,[72] Thompson,[73] Blau and Scott[74] raise the question of functional strain towards autonomy as the complexity of an organization increases.

Therefore, the formal characteristics of organizations explicated by Hage represent a unified conceptualization of the more frequently discussed structural characteristics of organizations. Since schools are formal organizations reflecting the characteristics of formalization, centralization and complexity, these concepts will be used in this study.

The usefulness of the concepts of formalization, centralization and complexity in an empirical study of organizational structure

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66 T. Parsons, R. Bales, and E. Shils, The Working Papers in the Theory of Action (Glencoe, Illinois: The Free Press, 1958).

67 Blau and Scott, Formal Organizations.

68 M. Crozier, The Bureaucratic Phenomenon (Stanford: Stanford University, 1963).

69 Barnard, "Functions and Pathology of Status Systems in Formal Organizations."

70 Blau and Scott, Formal Organizations.

71 Thompson, Modern Organization.

72 A. Gouldner, "Organizational Analysis," in R. K. Merton, L. Brown, and L. S. Cottnell, Sociology Today (New York: Basic Books, 1959).

73 Thompson, Modern Organization.

74 Blau and Scott, Formal Organizations.

was demonstrated by Hage and Aiken[75] in their investigation of centralization and its relationship to complexity and formalization.

The Theoretical Framework and Hypothesis

The theoretical framework to be used in this investigation was formulated by Getzels and Guba.[76] The model was formulated on the basis of three criteria: (1) it was to provide a set of integrated concepts and relations capable of answering and posing questions related to administration; (2) the concepts involved were to be operational; and (3) the model was to be parsimonious. Getzels and Guba describe their social systems model as follows:

> We conceive of the social system as involving two classes of phenomena, which are at once conceptually independent and phenominally interactive. There are first the institutions with certain roles and expectations that will fulfill the goals of the system. And there are second the individuals with certain personalities and need-dispositions inhabiting the system, whose observed interactions compose what we generally call "social behavior." We shall assert that this social behavior may be understood as a function of these major elements: institution, role, and expectation which together constitute what we shall call the nomothetic or normative dimension of activity in a social system; and individual, personality, and need-disposition, which together constitute the idiographic or personal dimension of activity in a social system.[77]

This model is represented pictorially as indicated in figure 1.

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75 Hage and Aiken, "Relationship of Centralization to Other Structural Properties."

76 J. W. Getzels and E. G. Guba, "Social Behavior and the Administrative Process," School Review, Number 55, (Winter, 1957), pp. 423-441. Getzels and Guba acknowledge Talcott Parsons' theoretical writings as having influenced their formulation.

77 J. W. Getzels, "Administration as a Social Process," found in A. W. Halpin, ed., Administrative Theory in Education (New York: Macmillan Co., 1967) p. 152.

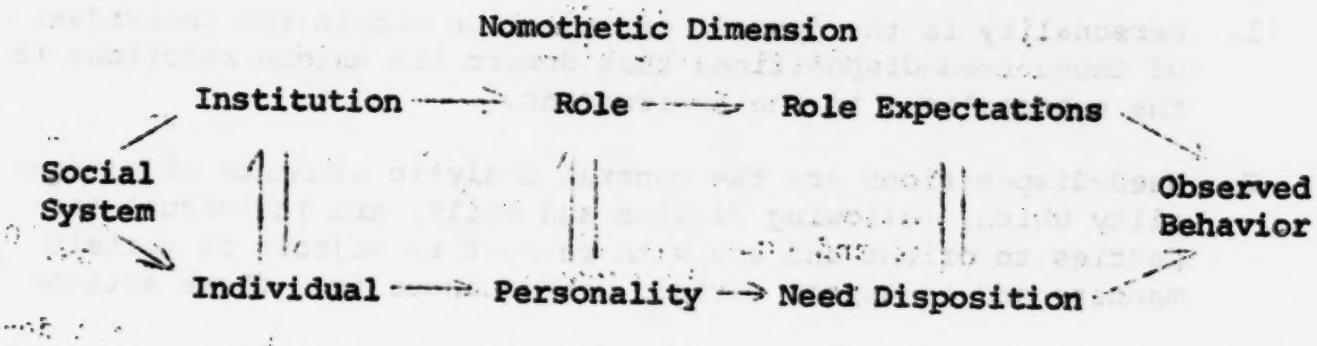

Figure 1 - General model showing the nomothetic and idiographic dimensions of social behavior.[78]

Getzels defines the elements comprising the model as:

1. Institutions - agencies established to carry out imperative functions that have come in time to be routinized such as - governing, policing and educating.

2. Roles - the most important analytic subunit of the institution; the positions, offices and statuses which define the behavior of the role incumbents.

3. Role expectations - normative obligations and responsibilities which, when put into effect, result in the role incumbent performing his role.

4. Roles are interdependent in that each role derives its meaning from its relation to another.[79]

Thus, the normative dimension is described as an institution established to perform specific functions and it is structured, defining the role it expects its incumbents to assume in order for the institution to achieve its purposes. This dimension represents the sociological level of analysis. However, the institutional dimension is inhabited by individuals assuming roles and reacting to expectations thus requiring a psychological level of analysis. In describing the idiographic or individual dimension, Getzels defines the elements in this level of analysis as:

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78 Ibid., p. 156.

79 Ibid., pp. 152-154.

1. Personality is the dynamic organization within the individual of those need-dispositions that govern his unique reactions to the expectations in the environment.

2. Need-dispositions are the central analytic elements of personality which, following Parsons and Shils, are individual tendencies to orient and act with respect to objects in certain manners and to expect certain consequences from these actions.[80]

Thus, the elements comprising the social systems model have been defined by Getzels and Guba in terms of its institutions, and the institution by its roles and each role by its expectations. In the idiographic dimension, each element again serves as the analytic unit for the preceding element. Within the framework of the model, the behavior of an individual (with certain need-dispositions that are determined by his personality make-up) attempting to cope with environmental expectations that are structured by the institution, is noted.

Getzels and Guba express this relationship in equation form: $B = f(R \times P)$, where B is the observed behavior, R is a given institutional role defined by the expectations attached to it, and P is the personality of the role incumbent defined by his need-disposition.[81] Observed behavior, then, is described as a function of the interaction that takes place between the personality of an individual and the role which he is expected to inhabit, as defined by the institution.

Relevance of the Social Systems Model

The major theoretical assumption underlying this study is that the climate of an organization as perceived by teachers is directly related to the degree of compatibility that exists between the structural properties of an organization and the personality traits of an individual. This assumption is based on the observation that an individual's personality, as indicated in specific behavioral responses to given need-dispositions, and the role expectations of the organization as defined by the structural properties of the organization, are independent and phenomenally interactive dimensions. This assumption is similar to the contention supported by Getzels and Guba.

Organizational climate as conceptualized by Halpin, Lonsdale and Argyris similarly define the organizational behavior of organizational members in terms of personalities interacting within an organizational setting. Similarly, the structural characteristics

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80 Ibid., pp. 154-155.

81 Ibid., p. 157.

in formal organizations define the roles individuals are expected to perform, thus describing the institutional or nomothetic dimension.

By modifying the Getzels-Guba Model of social behavior and interchanging organizational climate for observed behavior, and structural properties for institutional role, the interaction process among the variables concerned with this study may be expressed as $C = f (S \times P)$. As an interaction model, this indicates that the organizational climate (C) within a school can be defined as a function (f) of the interaction that occurs between the role expectations inherent in the structural properties of the organization (S) and certain personality factors of organizational members (P). Thus, the individual's perception of the climate of the organization in which he functions is influenced by the degree to which his personality traits are compatible with the institutional role. Consequently, it is predicted that:

> Hypothesis: The organizational climate of elementary schools as perceived by teachers is a function of the interaction that occurs between the teachers' perception of the organization's structural properties and certain personality characteristics of teachers.

Summary

In this section the concept of organizational climate as a distinct and unique level of analysis was presented and discussed. This concept was defined in terms of organizational behavior that reflected the ability of individuals to accommodate to the organization. This accommodation considered the interrelationships resulting among the dimensions of formal organizational structures and the personality factors of the individuals inhabiting the organization. The formal characteristics of organizations were discussed and concepts of organizational structure to be used in this study were presented.

Getzels' and Guba's Social Systems Model was presented as the theoretical framework which will guide this research. The theoretical framework analyzes behavior in terms of the interaction that occurs between two independent and interactive dimensions. The major hypothesis developed from the theoretical formulation.

The next steps involved empirical operations designed to provide a test of the hypothesis.

RESEARCH DESIGN AND MEASUREMENT

Restatement of the Problem and the Hypothesis

The present research was proposed as an initial empirical investigation into the relationships between structural property and personality variables, and more particularly, their effect upon the organizational climate of the school. Specifically, this research investigated the relationship within public schools between organizational structure and teacher personality traits, and how the resulting interaction between these two factors affected the organizational climate of the school.

By modifying slightly the Getzels' model of social behavior,[82] the interaction process between these variables may be expressed as $C = f(S \times P)$. As an interaction model, this equation indicates that the organizational climate (C) within a school can be defined as a function (f) of the interaction between the demands of the structural properties of the organization (S) and certain characteristics or personality factors (P) of organizational members. Thus, the type of organizational climate perceived is directly related to the degree of compatibility found in the organization between its structural properties and the individual personality traits of the organizational members. A desirable climate will be perceived by the individual member when a high degree of congruence is present in the interactions between the demands of the structural properties of the organization and the personal, need-dispositions of the participant. Conversely, when the individual personality is not compatible with the demands of the structural characteristics of the organization, the climate as perceived by the individual will not be considered desirable. A similar contention is supported by Getzels' social system theory[83] which defines behavior in terms of the interaction which takes place between the nomothetic and idiographic dimensions of the system. The individual functioning in a social system must contend with the role expectations as defined by the institution, and he must satisfy his own needs which relate to his personality.

The resultant organizational behavior of the individual is affected by the degree of congruency existing between the nomothetic dimension (structural dimension) and the idiographic dimension (personal needs). The relationship between organizational behavior,

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82 J. W. Getzels, "Administration as a Social Process," found in A. W. Halpin, ed., Administrative Theory in Education (New York: The Macmillan Co., 1967), pp. 150-165.

83 Ibid.

personality and organizational structure will be tested through the following hypothesis:

> The organizational climate of elementary schools as perceived by teachers is a function of the interaction that occurs between the teachers' perception of the organization's structural properties and certain personality characteristics of teachers.

For the purpose of this study, organizational climate was defined as the organizational behavior as perceived by teachers which results from the interaction that takes place between organizational functionaries as they fulfill their prescribed institutional role while satisfying their individual needs.

The Instruments

The Organizational Climate Description Questionnaire (OCDQ)

In 1963, Andrew W. Halpin and Donald Croft developed the OCDQ which purports to identify eight distinct dimensions of organizational behavior of elementary teachers.[84] The major analysis in the construction of his instrument was accomplished with data secured from 1,151 elementary teachers in a total of 71 elementary schools. By factor analysis, Halpin and Croft identified the eight behavioral dimensions of Organizational Climate. Sixty-four Likert-type items which loaded on the eight dimensions conceptualized by the investigators were assigned to eight corresponding subtests. The first four subtests refer primarily to the behavior of teachers; the second four to the behavior of the principal. Halpin's definitions of these dimensions are as follows:

Teachers' Behavior

1. Disengagement refers to the teachers' tendency to be "not with it." This dimension describes a group which is "going through the motions," a group that is "not in gear" with respect to the task at hand. It corresponds to the more general concept of anomic as first described by Durkheim. In short, this subtest focuses upon the teachers' behavior in a task-oriented situation.

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84 A. W. Halpin and D. B. Croft, The Organizational Climate of Schools (U. S. Office of Education, Department of Health, Education, and Welfare, Contract No. SAE 543 (8639), 1963).

2. Hindrance refers to the teachers' feeling that the principal burdens them with routine duties, committee demands, and other requirements which the teachers construe as unnecessary busy-work. The teachers perceive that the principal is hindering rather than facilitating their work.

3. Esprit refers to "morale." The teachers feel that their social needs are being satisfied, and that they are, at the same time, enjoying a sense of accomplishment in their job.

4. Intimacy refers to the teachers' enjoyment of friendly social relations with each other. This dimension describes a social-needs satisfaction which is not necessarily associated with task-accomplishment.

Principal's Behavior

1. Aloofness refers to behavior by the principal which is characterized as formal and impersonal. He "goes by the book" and prefers to be guided by rules and policies rather than to deal with the teachers in an informal, face-to-face situation. His behavior, in brief, is universalistic rather than particularistic; nomothetic rather than idiosyncratic. To maintain this style, he keeps himself--at least, "emotionally"--at a distance from his staff.

2. Production Emphasis refers to behavior by the principal which is characterized by close supervision of the staff. He is highly directive, and plays the role of a "straw boss." His communication tends to go in only one direction, and he is not sensitive to feedback from the staff.

3. Thrust refers to behavior by the principal which is characterized by his evident effort in trying to "move the organization." "Thrust" behavior is marked not by close supervision, but by the principal's attempt to motivate the teachers through the example which he personally sets. Apparently, because he does not ask the teachers to give of themselves any more than he willingly gives of himself, his behavior, though starkly task-oriented, is nonetheless viewed favorably by the teachers.

4. Consideration refers to behavior by the principal which is characterized by an inclination to treat the teachers "humanly,"[85] to try to do a little something extra for them in human terms.

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[85] A. W. Halpin, Theory and Research in Administration (New York: Macmillan Co., 1966), pp. 150-151.

For each of the 71 schools, a profile of the eight subtests was constructed, using raw scores that were standardized normatively and ipsatively. The Q technique of factor analysis was applied to the 71 profiles, resulting in six major patterns of factor loadings. A mean-profile was next computed for those profiles within the set which were distinguished by a high loading on only one of the three profile factors. These six profiles were designated as prototype profiles and defined the six organizational climates. The six climates were ranked from Openness to Closedness and were operationally defined as follows:

1. The Open Climate describes an energetic, lively organization which is moving toward its goals, and which provides satisfaction for the group members' social needs. Leadership acts emerge easily and appropriately from both the group and the leader. The members are preoccupied disproportionately with neither task achievement nor social-needs satisfaction; satisfaction on both counts seems to be obtained easily and almost effortlessly. The main characteristic of this climate is the "authenticity" of the behavior that occurs among all the members.

2. The Autonomous Climate is described as one in which leadership acts emerge primarily from the group. The leader exerts little control over the group members; high Esprit results primarily from social-needs satisfaction. Satisfaction from task achievement is also present, but to a lesser degree.

3. The Controlled Climate is characterized best as impersonal and highly task-oriented. The group's behavior is directed primarily toward task accomplishment, while relatively little attention is given to behavior oriented to social-needs satisfaction. Esprit is fairly high, but it reflects achievement at some expense to social-needs satisfaction. This climate lacks openness, or "authenticity" of behavior, because the group is disproportionately preoccupied with task achievement.

4. The Familiar Climate is highly personal, but undercontrolled. The members of this organization satisfy their social needs, but pay relatively little attention to social control in respect to task accomplishment. Accordingly, Esprit is not extremely high simply because the group members secure little satisfaction from task achievement. Hence, much of the behavior within this climate can be construed as "inauthentic."

5. The Paternal Climate is characterized best as one in which the principal constrains the emergence of leadership acts from the group and attempts to initiate most of these acts himself. The leadership skills within the group are not used to supplement the principal's own ability to initiate leadership acts.

Accordingly, some leadership acts are not even attempted. In short, little satisfaction is obtained in respect to either achievement or social needs; hence, Esprit among the members is low.

6. The Closed Climate is characterized by a high degree of apathy on the part of all members of the organization. The organization is not "moving;" Esprit is low because the group members secure neither social-needs satisfaction nor the satisfaction that comes from task achievement. The members' behavior can be construed as "inauthentic;" indeed, the organization seems to be stagnant.[86]

For the purpose of this study, the mean, raw subtest scores of each teacher will serve as the dependent variables by which relationships with the personality characteristics and structural properties will be examined. A specimen sample of the OCDQ is located in the Appendix.

The OCDQ is most appropriate for inclusion in this study. It is based on the same general population (elementary teachers) as this study and the behavioral constructs it measures are consonant with factors identified by other theorists. Halpin and Croft identified three general factors which were named Social Control, Esprit, and Social Needs. The Social Control factor identified task-oriented behavior; the Esprit factor inferred a feeling of togetherness and morale; and the Social Needs factor described friendship and behavior of an intimate and personal nature. These are similar to the three general factors that Shutz[87] identified in the FIRO tests (Control, Inclusion and Affection). Control is defined as behavior directed toward interpersonal need for control and refers to behavior characterized by the following terms: "Dominance," "authority," "rules," and "tasks." Inclusion is defined as behavior directed towards the satisfaction of the interpersonal need for inclusion, and refers to behavior that connotes "belonging," "communication," and "togetherness." Affection is defined as behavior that is directed toward the satisfaction of the need for affection and refers to behavior characterized by the following terms: "like," "personal," and "friendship." Shutz contended that these three general factors constitute a sufficient set of interpersonal behaviors for the prediction of interpersonal phenomena.

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86 Ibid., pp. 174-181.

87 W. C. Shutz, FIRO A Three Dimensional Theory of Interpersonal Behavior (New York: Rinehart and Company, Inc., 1958), pp. 21-23.

Ryans'[88] comprehensive study of characteristics of teachers similarly identified three behavior patterns:

TCS Pattern YO - responsible, businesslike, systematic vs. evading, slipshod teacher behavior.

TCS Pattern ZO - stimulating, imaginative, surgent vs. dull, routine teacher behavior.

TCS Pattern XO - warm, understanding, friendly vs. aloof, egocentric, restricted teacher behavior.

The similarity of the concepts described, by Shutz and the factors identified by Ryan, are obvious, and their similarity to the three general factors identified by Halpin and Croft are readily apparent. Numerous other studies which have identified assentially the same three constructs have been discussed at length by Croft.[89] He also describes a number of recent studies which relate the three constructs to other criteria of school effectiveness.

Three methods were used to estimate the reliability for the subtests of the OCDQ: split-half coefficient of reliability, split-respondents, and communality estimates for the three-factor rotational solution.[90] These estimates are reported in TABLE 1.

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88 D. G. Ryans, Characteristics of Teachers: Their Description, Comparison and Appraisal (Washington, D. C.: American Council on Education, 1960).

89 D. B. Croft, "Operationally Defined Constructs to Describe Student Social Behavior" (Unpublished doctoral dissertation, University of Utah, 1968), pp. 22-28.

90 Halpin and Croft, The Organizational Climate of Schools, pp. 64-68.

TABLE 1

ESTIMATES OF INTERNAL CONSISTENCY AND OF EQUIVALENCE FOR THE EIGHT OCDQ SUBTESTS

OCDQ Subtest	Split-half Coefficient of Reliability, Corrected by the Spearman-Brown Formula[a] (N = 1151)	Correlation between Scores of the Odd-Numbered and the Even-Numbered Respondents in Each School[b] (N = 71)	Communality Estimates[c] for Three-Factor Rotational Solution (N = 1151)
1. Disengagement	.73	.59	.66
2. Hindrance	.68	.54	.44
3. Esprit	.75	.61	.73
4. Intimacy	.60	.49	.53
5. Aloofness	.26	.76	.72
6. Production Emphasis	.55	.73	.53
7. Thrust	.84	.75	.68
8. Consideration	.59	.63	.64

[a] Estimate of internal consistency.
[b] Estimate of equivalence.
[c] These are lower-bound, conservative estimates of equivalence.

In selecting this instrument, the investigator considered that the original sample was based upon elementary teachers representing several geographic regions, including California; that the samples were drawn from school districts which ranged in size from larger urban districts to the smaller suburban districts. Although validity was not established statistically, the investigator accepted the instrument on the basis of its face validity. Also, the three general factors delineated in the OCDQ were fully supported in the literature, corresponding to similar factors identified by Shutz and Ryans and described as basic factors in all social interaction.

Definition of Organizational Members

Organizational members (or organizational participants) are limited to certificated, full-time, elementary teachers within public school systems. Students, classified personnel, administrators and personnel other than elementary teachers were not included in the study.

Definition of Personality Characteristics of Organizational Members

The concept "personality" has a variety of meanings. For this study, Getzels' definition was considered to be most appropriate and compatible with the instrument that was used. Getzels defines personality as the "dynamic organization within the individual of those need-dispositions that govern his unique reactions to the . . . expectations in the environment. The central analytic elements of personality are the need-dispositions which we can define with Parsons and Shils as 'individual tendencies to orient and act with respect to objects in certain manners and to expect certain consequences from these actions'."[91]

The Sixteen Personality Factor Questionnaire - Form C (16-P.F.)

The 16-P.F. is a factor analytically constructed personality questionnaire developed by R. B. Cattell and H. W. Eber.[92] It was designed to measure the major dimensions of human personality comprehensively. The instrument is properly validated with respect to the primary personality factors rooted in general psychological research. The psychological meanings of the 16 factors, according to the authors, represent the main dimensions that:

1. have been found necessary and adequate to cover all the kinds of individual differences of personality that are found in common speech and psychological literature;

2. are independent of each other so that it is possible to combine any score whatever on one factor with any score on others;

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[91] Getzels, "Administration as a Social Process," p. 154. The Parsons and Shils definition is found in T. Parsons and E. A. Shils, "Values, Motives and Systems of Action," Toward a General Theory of Action, ed., T. Parsons and E. A. Shils (Cambridge: Harvard University Press, 1951), p. 114.

[92] R. B. Cattell and H. W. Eber, Handbook for the Sixteen Personality Factor Questionnaire (Champaign, Illinois: Institute of Personality and Ability Testing, 1964).

3. are known to be important in the sense of each having a wide area of influence on behavior.[93]

The 16-P.F. does not measure personality factors based upon the nature of the subject's statements about himself, but from the known correlation between these "mental interiors" as found in questionnaire factors and the factors established in behavior. The responses are treated as behaviors, not as self-ratings.

Norms for the test are based upon the general adult population and the background of the test is documented in numerous publications including several hundred journal articles. The constructs underlying the 16-P.F. are based upon some twenty-five years of published psychological research in which every item has been subjected to factor analytic investigation. Split-half reliabilities for each of the personality factor scales range from +.73 to +.96, averaging approximately +.88. Reliability and validity were established with appropriate statistical treatments which are reported in detail in the manual.[94]

Concept validities of the 16 factor scales were calculated in two ways. From the known factor loadings of the items on the factors in the original research, using the formulae devised by Cattell for obtaining validities of extended factor scales, mean validities for the 16-P.F. ranged from .74 to .96 for each of the factor scales. Validities estimated from correlation of two factor halves, based upon two forms of the 16-P.F. ranged from .87 to .96.

Since the norms for the test were based upon the general adult population which included elementary and junior high teachers, and the validity and reliability estimates were at an acceptable level, the 16-P.F. was considered adequate for the purposes of this investigation.

The personality factors identified by this instrument are as follows:

Factor A - Schizothymia vs. Cyclothymia
differentiates easy going, cooperative, adaptable vs. aggressive, aloof, rigid and suspicious traits.

Factor B - Low vs. High Intellect
low morale, quitting, boorish, dull vs. conscientious, persevering, cultural and bright traits.

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93 Ibid., pp. 2-10.

94 Ibid., pp. 2-10.

Factor C - Low Ego vs. High Ego Strength
immature, low frustration tolerance, evasive vs. emotional maturity and stability, phlegmatic and high frustration tolerance traits.

Factor E - Submissive vs. Dominance
dependent, conventional, easily upset vs. independent, unconventional and "tough" traits.

Factor F - Desurgency vs. Surgency
glum, sober, serious vs. enthusiastic, cheerful and expressive traits.

Factor G - Low Super Ego vs. High Super Ego
casual, frivolous, undependable vs. conscientious, responsible and persistent traits.

Factor H - Threctia vs. Parmia
timid, shy, careful vs. adventurous, active and carefree traits.

Factor I - Harria vs. Premsia
tough, realistic, self-sufficient vs. sensitive, effeminate, dependent traits.

Factor L - Inner Relaxation vs. Protension
trustful, adaptable, composed vs. suspecting, withdrawn and irritable traits.

Factor M - Praxeonia vs. Autia
conventional, practical, uncreative vs. creative, unconventional, and imaginative traits.

Factor N - Naivete vs. Shrewdness
simple, awkward, unskilled vs. sophisticated, insightful and ambitious traits.

Factor O - Confidence vs. Timidity
self-secure, confident, resilient vs. timid, insecure, and moody traits.

Factor Q_1 - Conservatism vs. Radicalism
conservative, accepting, uninformed vs. experimenting, critical and well-informed traits.

Factor Q_2 - Group Dependence vs. Self-Sufficiency
dependent, imitative, conforming vs. non-conforming, self-sufficient and independent traits.

Factor Q_3- Low Integration vs. Self Sentimental Control
inconsiderate, uncontrolled, lax vs. self-controlled, persistent, and conscientious traits.

Factor Q_4- Low vs. High Ergic Tension
composed, calm, phlegmatic vs. tense, excitable traits.[95]

As indicated previously, the formal characteristics of organizations as explicated by Hage[96] and later by Hage and Aiken,[97] represent a unified conceptualization of the more frequently discussed structural characteristics of formal organizations. The structural properties instrument that was designed for this study purports to measure four distinct properties. These properties reflect the degree of formalization, centralization, complexity, and stratification in the organizational structure of elementary schools. The items selected for the instrument were initially based upon the following definitions of the structural properties concerned:

1. Formalization: Formalization represents the use of formal rules and regulations and standardization in the organization. Operations within the organization are governed by a system of rules and consistent application of these rules by the functionaires to all cases. The extensiveness of formal rules and regulations and the degree of standardization represents the degree of formalization in an organization.

2. Centralization: Centralization is a measure of the distribution of power in an organization and is comprised of two measures: Decision-making and a hierarchy of authority. The first measure represents how much an organizational member participates in decisions affecting the organization. The second measure refers to decisions involving the work associated with each social position. If subordinates are allowed to make their own work decisions, there is low reliance on hierarchy of authority for control. If all decisions must be referred to a superordinate, there is a high hierarchy of control. The degree of participation in the decision-making process and the degree of reliance

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95 Ibid., pp. 11-19.

96 J. Hage, "An Axiomatic Theory of Organization," Administrative Science Quarterly, Vol. 10 (December, 1965), pp. 289-320.

97 J. Hage and M. Aiken, "Relationship of Centralization to Other Structural Properties," Administrative Science Quarterly, Vol. 12 (December, 1965), pp. 72-92.

upon a hierarchy of control represents the degree of centralization in an organization.

3. Complexity: Complexity is a measure of occupational specialties included in the organization; the length of training required to qualify for a position and the extensiveness of involvement in professional activities related to the position. The degree of training required and the extensiveness of participation in professional activities is a measure of the degree of complexity of an organization.

4. Stratification: Stratification is a measure of the status system of an organization based upon the prestige associated with the position and the differences in rewards (economic). The degree of prestige and the amount of financial compensation associated with the organizational member reflects the degree of stratification of the organization.

The Structural Properties Questionnaire (SPQ)

A review of the literature failed to identify an existing instrument that would measure the four structural properties originally intended by the investigator for the purposes of this study. Therefore, it was necessary to construct an instrument as a preliminary step prior to collection of the data necessary to test the major hypothesis of this inquiry. The method and statistical treatments employed are next presented.

The Research Objective

The SPQ was constructed for the purpose of measuring structural properties based upon constructs devised by Hage and Aiken.[98] As developed earlier in this presentation, the constructs or characteristics of formalization, complexity, centralization and stratification were found to be consistent with, and a unified conceptualization of, the more frequently discussed structural properties of formal organizations. In designing the questionnaire, several other factors were considered. The instrument was to be given in a group situation and would be one of three instruments administered. The cooperation of the teachers involved was not to be jeopardized by subjecting them to an instrument that was lengthy or difficult to administer. For this purpose then, a Likert-type questionnaire similar to the OCDQ was the preferred choice.

A set of simple statements was prepared and each respondent was asked to indicate to what extent each statement characterized his

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[98] Hage and Aiken, "Relationship of Centralization to Other Structural Properties," pp. 72-92.

school. The following items illustrate the kind of statements used:

1. The Principal is willing to by-pass regulations to help teachers.

2. Teachers are free to use any Teaching Techniques they think best.

The scale against which the respondent indicated the extent to which each statement characterized his school was defined by four categories:

1. Rarely occurs.
2. Sometimes occurs.
3. Often occurs.
4. Very frequently occurs.

These four categories of responses were scored by assigning to each respective category four successive integers listed above and the responses were punched on IBM cards.

Procedure

Using Hage and Aiken's conceptualization of structural properties as the framework, each of the four characteristics described was defined in operational terms. Based upon these definitions, an "item pool" was developed. Each item was developed with the intent to remain consistent with the definition of the property to be measured and also appropriate to an educational setting. The items were to serve as indicies of complexity, formalization, centralization and stratification in an elementary school system. The resulting item pool contained three hundred and fifty items that purportedly tapped each of the four structural properties.

The three hundred and fifty items were listed and the four structural property definitions were typed on separate sheets of paper and were given to five students of organizational theory. These individuals were asked to select from the item pool those items that best represented the construct defined and to list the number representing the item on the page containing the definition of the property that item described. Each individual performed this task independently of the other. Their selections were then compared and the items selected were those which were selected unanimously by the independent raters. Of the original three hundred and fifty items in the item pool, seventy survived the screening process. The final version of the SPQ was composed of these seventy items. The independent raters unanimously agreed upon twenty-four items that measured formalization, twenty-nine items measured centralization, fifteen items that measured complexity and two items measuring stratification.

The SPQ was next administered to a sample of two hundred and ninety-six teachers and the responses were subjected to factor analysis[99] to determine whether the four measures of structural properties were "factorially pure," thereby identifying the unities or fundamental properties underlying the measures.

Four Factor Rotational Solution

A four-factor varimax rotational solution for the four structural properties was performed. The factor analysis results are presented in Tables 2 through 5. Using the procedure outlines in Harman[100] (Table B in the Appendix), for approximating the standard error of the factor loadings, loadings greater than .39 are found to be significant beyond the .01 level. Therefore, only those items receiving factor loadings of .40 or better were identified as being sufficiently representative of a measure of the factor. The items are identified in Tables 2 through 5 on the basis of the particular structural property they were originally constructed to measure (SPQ Items), the loading associated with each item (Factor I Loadings) and the communality associated with each loading (h^2). The communalities (h^2) are the squared sum of the factor loadings in each row, and when converted to percentages, indicate the amount of common variance accounted for by the item.

TABLE 2

Four-Factor Varimax Rotational Solution for Total Sample (N = 296 Respondents)

SPQ Items	Factor I Loadings	h^2
1. Centralization	-.482	.36
2. Centralization	-.537	.34
4. Centralization	-.489	.27
16. Centralization	-.479	.33

99 University of Miami Biometric Laboratory Program BMDX72, Miami, Florida. The U.C.L.A. computer facilities were used to perform a four-factor varimax rotational solution for the four structural properties.

100 H. H. Harman, Modern Factor Analysis (Chicago: University of Chicago Press, 1960), p. 177.

24.	Formalization	-.416	.27
25.	Formalization	-.604	.44
26.	Formalization	-.596	.45
29.	Formalization	-.498	.29
31.	Formalization	-.456	.23
32.	Formalization	-.444	.39
35.	Formalization	-.605	.48
36.	Formalization	-.441	.25
39.	Formalization	-.695	.52
40.	Formalization	-.460	.25
41.	Formalization	-.509	.35
58.	Complexity	-.619	.39
63.	Stratification	-.449	.31

Seventeen items of SPQ secured high loadings on Factor I. Of the seventeen items, eleven were items that were constructed to measure the property of formalization and these items clustered appropriately, supporting the intent of the investigator. Factor I was contaminated by six items. Items 1, 2, 4, and 16 were constructed to measure centralization and their loadings on the factor were -.333, -.213, -.10 and -.277, respectively, sharing some of the variance of the factor for which they were constructed to measure. Item 58 did not load heavily on any of the other three factors. Item 63 loaded also on Factor III (-.283) and Factor IV (-.158). One explanation for consideration is that the six contaminating items were, in the broadest sense, items that may be interpretable as measuring formalized structures in that in many school districts, the behaviors that these items describe are found in the rules and regulations listed in teachers' manuals. For example, procedures for disciplining students (Item 16), textbooks to be used (Item 4), courses to be offered (Items 1, 2), the requirement for teachers to attend institutes for certification purposes (Item 58), and merit salary adjustments (Item 63) are items that frequently are an integral part of the system of rules and regulations.

The majority of loadings were "factorially pure" and the items concerned were designed to measure the property of formalization. Factor I was identified as reflecting measures of the degree of formalization.

TABLE 3

Four-Factor Varimax Rotational
Solution for Total Sample
(N = 296 Respondents)

SPQ Items	Factor II Loadings	h^2
13. Centralization	-.551	.32
14. Centralization	-.492	.30
17. Centralization	-.550	.34
18. Centralization	-.585	.34
19. Centralization	-.741	.57
20. Centralization	-.671	.54
21. Centralization	-.631	.42
22. Centralization	-.547	.31
52. Centralization	-.471	.17
53. Centralization	-.445	.27

The loadings on Factor II are reported in TABLE 3. Ten items secured high loadings on Factor II and each of these items were originally constructed to measure the degree of centralization in elementary schools. Factor II in comparison to the other three factors is "factorially pure."

TABLE 4

Four-Factor Varimax Rotational
Solution for Total Sample
(N = 296 Respondents)

SPQ Items	Factor III Loadings	h^2
47. Formalization	-.418	.27
55. Complexity	-.532	.29
56. Complexity	-.515	.27
57. Complexity	-.498	.27
67. Complexity	-.439	.35

The loadings on Factor III are reported in TABLE 4. Six items secured significant loadings. Five of the six were constructed to measure the degree of complexity and the loadings confirmed the investigator's intent. Item 47 was intended to measure the degree of formalization. This item also had loadings on Factor I (-.276) and Factor II (-.12). The majority of the items measure the structural variable intended--complexity.

TABLE 5

Four-Factor Varimax Rotational
Solution for Total Sample
(N = 296 Respondents)

SPQ Items	Factor IV Loadings	h^2
44. Centralization	.427	.25
45. Centralization	.560	.41
46. Formalization	.499	.32
49. Formalization	.451	.23
50. Formalization	.528	.33
66. Complexity	-.417	.21

The loadings on Factor IV are reported in TABLE 5. Six of the items loaded heavily on Factor IV. In constructing the items for this factor, it was anticipated that those items measuring stratification would cluster together and comprise Factor IV. However, in examining the items securing the significant factor loadings, three of the items were intended to measure the degree of formalization (Items 46, 49 and 50); two of the items were constructed to measure centralization (44, 45), and item 66 was intended to measure complexity. The items constructed for measuring stratification did not account for a significant amount of the factor variance and could not be used. Upon closer examination of the items which made up Factor IV, it became evident that five of the items were measuring a behavior common to them all. Items 44, 45, 46, 49 and 50 raised questions regarding autonomous behavior in a formal setting. These are as follows:

44. How things are done here is left up to the person doing the work.

45. People here are allowed to do almost as they please.

46. Most people here make their own rules on the job.

49. The Principal is willing to by-pass regulations to help pupils.

50. The Principal is willing to by-pass regulations to help teachers.

With the exception of item 66 which measured complexity, the remaining five items tapped a dimension of organizational structure unanticipated by the investigator; Factor IV then is comprised primarily of items that measure the degree of autonomy. The notion of

investigating this dimension as a means of analyzing structural properties of schools was recently posited by Fred E. Katz.[101] He suggests ". . . a fundamental theorem--that an element of a system requires a degree of autonomy from that system if it is to make any functional contribution to that system."[102] Katz argues that schools are complex organizations, inhabited by specialists enjoying specialized skills and the skills are so highly complex that the formal rules of procedure cannot be full and detailed. He contends that organizational structure must encourage a considerable degree of autonomous judgement since this is an essential ingredient to the utilization of highly specialized knowledge.

On the basis of the loadings on Factor IV, and the serendipitous findings of a "common factor" inherent in five of the six items, it was decided to rename this factor. Factor IV reflects Autonomous Structures and measures the degree of autonomy permitted in the organization. Thus, the factor analysis identified four distinct factors; and the items associated with each factor measure four organizational properties as follows:

Factor I - Degree of Formalization - the extensiveness of formal rules and regulations and the degree of standardization.

Factor II - Degree of Centralization - the degree of participation in the decision-making process and the degree of reliance upon a hierarchy of control.

Factor III - Degree of Complexity - the degree of training required and the extensiveness of participation in professional activities.

Factor IV - Degree of Autonomy - the degree of freedom permitted by the organization for individuals to provide for their own structures.

Reliability and Validity

"Any research based on measurement must be concerned with the accuracy or dependability, or as usually called, reliability of measurement. A reliability coefficient demonstrates whether the test designer was correct in expecting a certain collection of items to

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101 F. E. Katz, "The School as a Complex Social Organization," Harvard Educational Review, Vol. 34, No. 3, 1964, pp. 428-455.

102 Ibid., p. 448.

yield interpretable statements about individual differences."[103] Retesting is a frequently used approach, but theoretically this approach has limitations. The test of internal consistency is recognized as an acceptable treatment for determining the degree of reliability. For this study, the alpha coefficient of internal consistency[104] was used to derive an estimate of the reliability of the items identified by factor analysis, The formula applied is a generalization of the Kuder-Richardson Formula 20.

The following procedure was used. The items scores in each scale which secured significant factor loadings ($\geq$.40) were selected for use in the study. Each item has a range of scores from one to four. The lowest number (1) representing a perception indicating minimal prevalence of the structural property being measured, and a rating of four indicating maximum prevalence of the structural property measured. In order to maintain consistency in the ratings, it was necessary to reverse the scores on items 16, 44, 45, 46, 49 and 50.

Item analysis for degree of reliability among the items in terms of overlapping variance was applied to the four factor derived scales.[105] Item, scale and total means, and the alpha coefficient of internal consistency were computed. The matrix giving each item number, scale (Factor) assignments, mean, correlations with total scale [R (Total)] and correlations with scale sums [R (Scale)] are presented in the Appendix. The alpha coefficient for each of the four scales is presented in TABLE 6.

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103 L. J. Cronbach, "Coefficient Alpha and the Internal Structure of Tests," Principles of Educational and Psychological Measurement (Chicago, Illinois: Rand McNally & Co., 1967), p. 133.

104 J. W. French and W. B. Michael, Standards for Educational and Psychological Tests and Manuals (Washington, D. C., American Psychological Association, Inc., 1966) p. 28.

105 D. J. Veldman, Fortran Programing for the Behavioral Sciences (New York: Holt, Rinehart, and Winston, Inc., 1967), p. 173. Program TESTAT, as described by Veldman, was used to compute the alpha coefficient.

TABLE 6

Coefficient of Internal Consistency
(N = 296 Respondents)

	Factor I	Factor II	Factor III	Factor IV	Totals
Number of Items	17	10	5	6	38
Alpha Coefficient	.83	.82	.65	.54	.85

Factor I - comprised of items measuring degree of formalization

Factor II - comprised of items measuring degree of centralization

Factor III - comprised of items measuring degree of complexity

Factor IV - comprised of items measuring degree of autonomy

The alpha coefficient for each scale was sufficiently large to support the reliability of the instrument.

As Kerlinger[106] cautions, the subject of validity is complex, controversial and peculiarly important in educational research for here, more than anywhere else is the nature of reality questioned. Generally, three types of validity are discussed as means of determining the degree to which a test is valid, that is, the degree to which it actually is measuring that property or attribute that it purports to measure. The validity of the SPQ was investigated on the basis of its content validity. Content validation is fundamentally judgmental. Test items are studied, each weighed for its presumed representativeness of the universe; then selected or rejected. The content of each item is judged by a competent authority who is familiar with the "universe" being studied. The method for establishing content validity was described earlier. To recap the procedure; five students of organization theory independently judged the adequacy of the content of the items constructed for the SPQ. The four structural properties were defined, and the judges were asked to match those items to the property they measured. Items from the pool which were not appropriate were discarded. The final selection of items were those which all five judges agreed upon independently.

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106 F. Kerlinger, Foundations of Behavioral Research (New York: Holt, Rinehart and Winston, Inc., 1967) p. 445.

Kerlinger[107] suggests that construct validity can be established through the use of factor analysis. If this technique were applied in this case, one could say that the factors which emerged from the analysis confirmed the dimensions of structural properties hypothesized, thus indicating that those items that were constructed to measure a particular property, did in fact cluster together, validating the theory behind their construction. This argument is extremely controversial and enjoys little support in the literature.

Summary

Items were developed to measure four properties related to organizational structures. The items were selected on the basis of content validity. A Linkert-type questionnaire was constructed utilizing these items and administered to 296 elementary teachers. Their responses were factor analyzed and those items which secured significant factor loadings were selected for use in major research study. The degree of reliability was reported, using the alpha coefficient of internal consistency. In testing the major hypothesis, the factor derived items were used as measures of formalization, centralization, complexity and autonomy. Each item score was weighted. The item score in each scale was multiplied by the factor loading on that item. This procedure made it possible to weight each score in proportion to the amount of variance the item contributed to the total variance. The total score for each scale was represented by a linear arithmetic summation of the weighted item scores in that scale.

Description of the Sample

A sample of two hundred and ninety-six teachers was selected from fifteen elementary schools located in two unified school districts in Southern California. District A is described as a small, affluent, residential community. This district is well known in the region for its innovative and experimental educational program. Within the district are located seven elementary schools, employing a total of one hundred and forty-two teachers. District B is located in a large urban community adjoining District A. Within the district are located twenty elementary schools employing a total of four hundred and twenty-five teachers. On the basis of observations made by several educators and students of educational administration located in the general area, the larger district (B) is described as having a more traditional educational program and as being more bureaucratic in comparison to District A.

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107 Ibid., p. 460.

The Superintendents of both school districts were first contacted, apprised of the nature of the study, and their permission was requested for the investigator to invite the elementary teachers in their respective districts to participate in the study. Both Superintendents expressed an interest and granted permission. The District A Superintendent made available the seven schools in his district and the Superintendent of District B randomly selected seven of the twenty elementary schools located in his district. The fourteen schools employed a total of three hundred and fifteen teachers. Each of the teachers was contacted, apprised of the intended study and extended an invitation to participate. They were assured of released time to complete the questionnaires and complete anonymity. All agreed to participate.

The unit of analysis of this study is the elementary teacher and the sample is representative of the two districts from which they were drawn.

Procedures for Collecting the Data

With the construction of the SPQ, three instruments were available for data collection. Prior to the administration of the questionnaires, the participants were advised as to the nature of the study and the instruments that were employed. All had the opportunity to raise whatever questions they felt necessary prior to responding to the questionnaires. As the percentage of responses will attest, the teachers proved to be most cooperative.

Each teacher received an unmarked manila envelope containing the OCDQ, the SPQ and the 16-P.F. questionnaires. They were given unlimited time to complete the questionnaires. Upon completion the answer sheets were placed in the manila envelopes which were then sealed and placed in a container. Of the three hundred and fifteen teachers participating, three hundred and six returned completed forms. Ten sets of questionnaires were not fully completed and were discarded. The answer sheets were coded by numbers in order that the three tests could be associated with each individual and the school and district in which he was employed. However, specific individuals could not be identified by name.

The questionnaires were hand scored and the scores were then punched into IBM cards. All computations were performed on computers.

Statistical Methods and Analysis

In order to test the hypothesis that the organizational climate perceived by teachers was a function of the interaction between

teachers' perceptions of the organization's structural properties and personality characteristics, several treatments were necessary. Prior to investigating the relationship between the climate variables and the interaction of structural and personality variables, it was first necessary to identify if there was in fact an interaction effect between the structural property and personality variables. This was accomplished by combining the structural and personality variables in order that independent components of variance could be identified and described as:

1. Primarily due to the structural components;
2. Primarily due to the personality components; or
3. Primarily a result of the interaction components of structure and personality.

Thus, the relationship between these independent components of variance and the climate profiles reflected which of these components contributed the most toward the respondent's perceptions of the climate.

Component analysis[108] provided a means for identifying independent components of variance. This statistical procedure is one of the class of factor analytic models that involves analysis of the total variance among a set of variables. The variables were intercorrelated and, with unities in the diagonal of the correlation matrix, the set of principal components was extracted. The resulting components represent independent (orthogonal) sources of variance. The components were removed in decreasing order according to the amount of total variance explained by each component in turn. Within the component, the variables' loading on the component identified the variables' contribution to the variance explained by the component. Thus, the square of a component loading revealed the proportion of variance in that variable explained by the component.

This technique made it possible to combine the structural and personality variables and on the basis of the loadings, to determine whether or not a given component identified (1) variance from the personality set, (2) variance from the structural set, or (3) variance from a combination of both sets of variables. The components containing contributions from both sets of variables represent an area of overlap between the domains of perceived structure and personality.

Once the independent components of variance had been identified, the relationship between the components and the climate variables were identified through the use of canonical correlation analysis.

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108 W. W. Cooley and P. R. Dohnes, Multivariate Procedures for the Behavioral Sciences (New York: John Wiley and Sons, Inc., 1962), pp. 151-161.

This technique is an appropriate procedure to use when sets of dependent and independent variables obtained from measurements made on the same subjects are to be interrelated. This technique was introduced by Hotelling[109] and provides for the following analytical objectives:

a. Determines the maximum correlation between a set (of more than one element) of criterion variables and predictor variables.

b. Derives "weights" for each set of criterion and predictor variables, such that the weighted sums are maximally correlated.

c. Derives additional linear functions which maximize the remaining correlation, subject to being independent of the preceding set(s) of linear compounds.

d. Tests statistical significance of the correlation measures.[110]

As explained by Rentz, "Canonical correlation is an extension of multiple correlation; where, instead of multiple predictors and a single criterion, both multiple predictors and multiple criteria are analyzed simultaneously. The resulting canonical correlation coefficient represents the maximum relationship between the two sets of variables, or more specifically, the relationship between linear composites of the two sets of variables weighted according to vectors of regression weights."[111] The relative sizes of the elements of the vectors of weights indicated which of the variables contributed the most to the relationship demonstrated by the canonical correlation.

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109 H. Hotelling, "The Most Predictable Criterion," Journal of Educational Psychology, No. 26, 1935, pp. 139-142, and H. Hotelling, "Relations Between Two Sets of Variates," Biometrika, No. 28, 1936, pp. 321-377.

110 P. E. Green, M. H. Halbert, and P. J. Robinson, "Canonical Analysis: An Exposition and Illustrative Application," Journal of Marketing Research, Vol. 3 (February, 1966), p. 33.

111 R. R. Rentz, E. B. Fears, and W. F. White, "Personality Correlation of Group Structure: A Canonical Correlation Analysis," The Journal of Psychology, Vol. 70, 1968, p. 165.

Thus, in order to test the hypothesis, the sixteen personality factor scores and the four structural property scores were intercorrelated, forming a 20 x 20 correlation matrix. The matrix was then factor analyzed and a complete set of 20 principal components was obtained. Component scores for each respondent on each of the 20 components were calculated. The relationship between the resulting 20 components and the eight climate profile variables were then determined by subjecting the set of climate scores to canonical analysis.

PRESENTATION AND ANALYSIS OF THE DATA

The findings of this study are based upon the data collected through the administration of the OCDQ,[112] the 16-P.F.,[113] and the SPQ.[114] Statistical treatment of the data was based on mean raw subtest scores.

Principal Component Analysis

The 16 P.F. scores and the four SPQ scores for each elementary teacher were intercorrelated forming a 20 x 20 correlation matrix. The correlation matrix was the next factor analyzed and a set of twenty principal components was obtained.[115] The results are reported in the Appendix.

Analysis in terms of the amounts and percentages of variance contributed by each of the 20 components, and the contributions of the personality and structural properties variables separately within each of the components are presented in TABLE 7. The eigenvalues represent the total variance contained in each component. The sums of the squared loadings for the variables of a given set composing a component divided by the eigenvalue associated with the component reveal the percentage of the variance contributed by the set(s) of variables concerned.

One concern in factor analytic treatments is the problem of the significance of the loadings and how to determine what loading and what components are to be used. Kaiser[116] recommends that

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112 A. W. Halpin and D. B. Croft, The Organizational Climate of Schools (Chicago Midwest Administration Center, University of Chicago, 1963).

113 R. B. Cattell and H. W. Eber, Handbook for the Sixteen Personality Factor Questionnaire (Champaign, Illinois: The Institute for Personality and Ability Testing, 1964).

114 The SPQ was developed by L. K. Bishop, M. Murphy and J. R. George at Claremont Graduate School, Claremont, California, 1968.

115 University of Miami Biometric Laboratory Program BMD 03M, Miami, Florida. This program was used to perform the necessary computation for principal component analysis.

116 W. W. Cooley and P. R. Lohnes, Multivariate Procedures for the Behavioral Sciences (New York: John Wiley and Sons, Inc., 1962), p. 160.

components with eigenvalues greater than one are appropriate for use in analysis. This rule applies only if unities are used in the diagonal. This condition has been met in this study.

Of the 20 components the first six meet the criteria of eigenvalues greater than one (TABLE 7). In analyzing these components, the following was observed:

Component 1

The variables which contributed the most to the variance of this component were: A (.56), C (.65), F (.60), H (.73), L (-.34), O (-.35), and Q_4 (-.54). These variables are defined as follows:

A - cooperative, soft-hearted, easy-going, kindly, not dependable in precision work or obligations, attentive to people, readily forms active groups.

C - realistic about life, phlegmatic, placid, stable, calm, emotionally mature.

F - talkative, frank, expressive, cheerful.

H - adventurous, sociable, spontaneous, pushy.

L - free of jealous tendencies, adaptable, cheerful, composed, a good team worker.

O - mature, calm, placid, resilient.

Q_4 - calm, relaxed, composed and satisfied.

Component 1 accounts for 13.65% of the total variance contributed by the 20 components. Within the component, the personality variables accounts for 92.50% of the component variance compared to 7.5% contributed by structural property variables. This component is primarily a personality component with no significant contributions from the structural dimension. The personality factors describe the teacher population as individuals who are cooperative, expressive, sociable, group conforming, calm, relaxed and resilient. These particular personality factors which loaded heavily on component 1 are interoperative in another manner. Cattell devised second-order factors from the 16-P.F. factorially.[117] These are components that identify psychological behaviors on the basis of the 16 primary factors. The combination of primary factors describing levels of

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117 Cattell and Eber, Handbook for the Sixteen Personality Factor Questionnaire, pp. 46-47.

TABLE 7

Component	Eigenvalue	Percentage of Total Variance	Percentage of Component Variance for Personality Set	Percentage Component Variance fo Structure Property Se
1	2.73	13.65	92.50	7.50
2	2.06	10.31	98.50	1.50
3	1.86	9.44	45.82	54.18
4	1.37	6.87	70.00	30.00
5	1.23	6.18	91.37	8.63
6	1.17	5.88	85.60	14.40
7	0.97	4.84	100.00	0.00
8	0.92	4.60	71.89	28.11
9	0.85	4.27	43.55	56.45
10	0.82	4.09	85.73	14.27
11	0.78	3.88	52.43	47.57
12	0.73	3.67	79.89	20.11
13	0.68	3.44	94.77	5.23
14	0.66	3.29	88.59	11.41
15	0.62	3.11	80.02	19.98
16	0.59	2.97	53.94	46.06
17	0.56	2.80	91.90	8.10
18	0.51	2.57	97.65	2.35
19	0.45	2.27	90.06	9.94
20	0.39	1.97	89.71	10.29

anxiety were found to be -C, -H, +O, -Q, +Q_4 and +L;[118] and the signs preceding the variables indicating high or low scores. The majority of the personality variables (C, H, L, O, Q_4) which secured high loadings in component 1 exhibit a pattern that is evidenced in second-order anxiety factors. The scores on each of the primary factors indicate that the component identifies a negative anxiety factor reflecting low anxiety.

Component 2

Variables E (.64), G (-.42), I (.41), L (.38), M (.55), N (.57), Q_1 (.33), Q_3 (-.32), and Q_4 (.38) account for the majority of the variance in component 2. These variables are defined as follows:

E - independent, assertive, solemn, unconventional.

G - demanding, impatient, undependable, obstructive, rule-bound.

I - attention seeking, anxious, subjective, gentle, effeminate, sensitive.

L - jealous irritable, suspecting, suspicious.

M - introverted, absent-minded, self-absorbed, immature in practical judgment.

N - socially alert, shrewd, expedient, aloof, exact, ambitious, insecure.

Q_1 - experimenting as compared to conservatism of temperament, critical, free-thinking.

Q_3 - undisciplined, self-conflict, follows own urges, careless of protocol.

Q_4 - tense, frustrated, driven, high ergic tension.

Component 2 accounts for 10.31% of the total variance and the loadings which contribute the most to this variance are secured primarily by personality variables. Within the component, they contribute 98.50% of the component variance. The personality factors, when considered individually, present a composite profile that described behavior as being independent, demanding, rule-bound, dependent, introverted, socially alert, critical, careless of protocol, tense and driven. Several of these behaviors appear to be contradictory at first glance. However, the pattern made up by the primary factors

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118 Ibid.

closely approximates the second-order factor that Cattell has named the "acting-out" factor. The combination of primary factors describing this behavior pattern is reported as E, -G, L, M, N, O, $-Q_2$, $-Q_3$, and Q_4.[119] This would indicate that teachers whose behavior patterns are described by this second-order factor are individuals who are not authentic in their behavior. The disengagement subtest of the climate profile describes a similar behavior--that of going through the motions. These teachers, then, are acting out a role and their behavior is inauthentic.[120]

Component 3

Personality variables F (.42), I (-.35), and L (.36) and all four of the structural variables accounted for the majority of the variance contributed by the third component. These variables are defined as follows:

F - enthusiastic, lively, happy-go-lucky.

I - tough-minded, self-reliant, realistic.

L - suspicious, self-opinionated, difficult to fool.

SP I - Formalization - organization is highly structured, extensive use of rules, and a high degree of standardization.

SP II - Centralization - a high degree of centralization--most decisions are made by superordinates who rely upon a hierarchy of control.

SP III - Complexity - a high degree of specialization, extensive preparation required for positions.

SP IV - Autonomy - this property in comparison to the other three was the lowest. The degree of autonomy granted to the organizational participants did not measure as high as SP I, SP II, or SP III.

Component 3 accounts for 9.44% of the total variance. The variables contributing to the variance are from both the personality set and structure set. Personality variables contributed 45.82% of the component variance, and the remaining 54.18% resulted from the contributions of structural property variables. This is a component that

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119 Ibid.

120 A. W. Halpin, Theory and Research in Administration (New York: The Macmillan Co., 1966), p. 150.

reflects an area of overlap between the domains of perceived structure and personality. A review of the variables making the major contributions to the component variance suggests individuals who are enthusiastic and lively but tough-minded and self-opinionated. These individuals perceived the organizational structures of their schools as being highly formalized, highly centralized, complex and not permitting autonomous structures to be as extensive as the preceding three.

Component 4

This component also reflected variance contributed by both personality and structure variables. These variables and their loadings were: B (.43), M (.37), O (-.36), Q_2 (.38), and SP IV (.50). These variables are defined as follows:

B - more intelligent, abstract-thinking, bright.

M - imaginative, careless of practical matters.

O - confident, self-assured.

Q_2 - independent, self-sufficient, prefers own decisions.

SP IV - Autonomy - perceives structures as permitting autonomous behavior.

Component 4 accounts for 6.87% of the total variance. Personality variables contribute 70% to the component variance and structure variables account for 30% of the component variance. The personality factors reflect a uniform pattern of behavior consistently as independent, confident, bright, and imaginative. These teachers perceived the structure as autonomous, permitting them freedom to provide for their own actions. This component also demonstrated an area of overlap between the domain of personality and perceived structures.

Component 5

The personality variables N (.39), Q_1 (.34), Q_2 (.50), and Q_3 (.61) contributed the most to the variance of this component. These variables are identified as follows:

N - shrewd, calculating, socially alert, expedient, aloof, exact, ambitious, insecure.

Q_1 - experimenting, critical, free thinking.

Q_2 - independent, self-sufficient, prefers own decisions.

Q_4 - controlled, socially precise, following self-image.

Component 5 accounts for 6.18% of the total variance and the personality variables contribute 91.37% to the component variance as compared to only 8.63% from structural variables. The personality variables describe primarily independent behaviors on the part of these individuals.

Component 6

Personality variables B (.39), L (.45), Q_2 (-.48), and SP III (.35) contributed the greatest amount to the variance of this component. These variables are defined as follows:

B - more intelligent, abstract-thinking, bright.

E - humble, accommodating, conforming.

L - suspicious, self-opinionated, difficult to fool.

Q_2 - group-dependent, follower.

SP III - Complexity - high degree of specialization. Extensive preparation required for positions.

Component 6 accounts for 5.88% of the total variance. The personality variables contributed 85.6% to the component variance while the structural variable contributed 14.4%. The personality variables suggest a pattern of behavior that describes individuals as intelligent group-dependent types who perceive the structure as being complex. This component also reflects an area of overlap in the domains of personality and structure.

Summary

Of the 20 "combination of personality and structural property" components, components one through six secured eigenvalues greater than one. Components 3, 4, and 6 revealed loadings of sufficient weight from both the personality and structure variables and the variance in these components is shared by both sets of variables. In components 1, 2, and 5 the personality variables are the major source of component variance.

The Relationship Between Organizational Climate and Personality Combined with Structural Properties

The purpose of this study was to investigate the structural properties of elementary schools; certain personality characteristics of teachers; and the relationship between these two measures and the teachers' perceptions of the organizational climate of their respective schools. This relationship was investigated by means

of canonical correlation analysis. The factor loadings in each component were combined and converted to standardized Z scores with means of zero and standard deviations of one.

In the canonical correlation analysis between the 20 components and the 8 subtests of the organizational climate profile, a chi square test of successive latent roots was performed. A summary of the results is provided in TABLE 8. The first two canonical correlations proved to be significant beyond the .001 level and were therefore included in this analysis since the two latent roots and their corresponding canonical correlations are of statistical importance and interpretive interest.

The two most important canonical correlations and their corresponding vectors are presented in TABLES 9 and 10. These vectors are regression weights and indicate the mathematical strength of the several factors in each set in developing the relationship between the two sets of factors.

In the first canonical function (TABLE 9), the vector weights identify the strongest relationship between principal components 1, 3, and 4 and the climate subtests identified as consideration, productivity and intimacy. The variance explained by component 1 is due primarily to the personality factors. However, the component variance in each of components 3 and 4 is shared by both the personality set and the perceived structure set. The largest single vector weight (.641) is associated with component 3 in which the component variance is shared almost equally by both sets of variables (See TABLE 7).

In the second canonical function (TABLE 10), the vector weights identify the strongest relationship between principal components 2, 4, 8, and 16 and the four climate subtests which indicate hindrance, disengagement, esprit and intimacy. The variance in component 2 is due primarily to the personality set, while components 4, 8, and 16 indicate variance shared by both personality and structure variables.

Thus, of the seven components related to the climate profile subtests in the two canonical functions, the majority of the components (5) were comprised of both personality and structure variables. This finding supports the hypothesis that personality in interaction with perceived structure is related to perception of climate more closely than either personality components or perceived structure components, taken separately. Thus, the teachers' perceptions of climate may be viewed as a function of the interplay between the teachers' personalities and the structure of the organization.

TABLE 8

Canonical Analysis

X^2 Tests of Successive Latent Roots for Canonical Correlations

Number of Latent Roots	Canonical Correlation	Wilks Lambda	X^2	Degrees of Freedom	P
0	.560	.338	303.9	160	<.0001
1	.517	.493	198.4	133	<.0002

TABLE 9

Canonical Analysis:
Principal Components and Climate Profile

Canonical Function I: (X^2 = 303.9, df = 160, P = .0001, Canonical R = .560)

Principal Components	Weights		Climate Profile
1	-.453	.016	Disengagement
2	-.009	.160	Hindrance
3	.641	-.152	Esprit
4	.463	-.530	Intimacy
5	-.095	-.107	Aloofness
6	-.172	.433	Production Emphasis
7	.090	-.005	Thrust
8	.173	-.439	Consideration
9	.154		
10	-.016		
11	.130		
12	.044		
13	-.080		
14	.028		
15	.154		
16	-.070		
17	-.024		
18	-.104		
19	-.021		
20	.006		

TABLE 10

Canonical Analysis:
Principal Components and Climate Profile

anonical Function II: (X^2 = 198.4, df = 133, p = .0002, Canonical R = .517)

rincipal Components	Weights		Climate Profile
1	-.233	.571	Disengagement
2	.522	.338	Hindrance
3	-.051	-.028	Esprit
4	-.315	.442	Intimacy
5	.025	.242	Aloofness
6	-.160	-.157	Production Emphasis
7	-.226	-.235	Thrust
8	.340	-.006	Consideration
9	.094		
10	.283		
11	-.282		
12	.155		
13	-.112		
14	.154		
15	.079		
16	-.321		
17	.001		
18	.121		
19	.107		
20	.109		

On the basis of the relationships among the variables and the behaviors they represent, further comment is warranted.

The participants in this study were identified according to the district in which they were employed. Their canonical Z scores, obtained according to the weights associated with the canonical correlations, were ordered from high to low for each of the canonical functions. Thus, a basis for comparing the respondents in the two districts in terms of their high and low scores was possible.

The following observations can be made regarding teachers' behaviors and perceptions on the basis of the following analysis of the vector weights obtained in the first canonical function (TABLE 9). Recall that each of the components represent "artificial variables" comprised of specific kinds of behaviors and perceptions, factorially devised, and representing independent sources of variance. Their independence from each other was further substantiated in the intercorrelation matrix obtained in the canonical correlation in which the intercorrelations among all of the components were computed to be 0.

Component 1 was associated with a negative weight of .453. Since component 1 represents a negative anxiety factor, a negative weight reflects high anxiety on the part of the respondents. Component 3 was associated with a positive weight of .641 and on the basis of the composition of this component, the positive weight reflects a pattern describing teachers who are self-opinionated, realistic and lively, perceiving their schools as being highly structured. Component 4 was associated with a positive weight of .463 and variables contributing the most were personality variables describing independent behavior and a tendency towards perceiving autonomous structures. The teachers exhibiting these behaviors and associated with the perceptions of organizational structures described above, perceived the organizational climate in terms of low intimacy (-.530) among staff members, low consideration (-.439) being exhibited by their respective principals, and high emphasis (.433) upon production.

In reviewing this pattern in terms of the respondents scores, some observations can be made. The canonical Z scores obtained according to the weights associated with the first canonical function are listed in TABLE 11. The patterns of behaviors and perceptions of structure and their relationship to scores are presented in an abbreviated, diagramatic form in TABLE 12.

Teachers with high scores identify with the patterns which suggest high anxiety, self-opinionated individuals who perceive high structures and independent types who perceive autonomous structures. Of these three components, component 4 accounts for the least of

TABLE 11

Canonical Z Scores of Respondents
Associated with Canonical Function I

High Scores				Low Scores			
A	2.68	A	1.38	B	-1.01	B	-1.44
A	2.58	A	1.36	B	-1.02	B	-1.45
A	2.57	A	1.35	B	-1.05	B	-1.49
A	2.56	A	1.34	B	-1.08	A	-1.51
A	2.53	A	1.33	B	-1.09	A	-1.55
A	2.49	A	1.29	B	-1.14	B	-1.55
A	2.35	A	1.21	A	-1.16	B	-1.62
A	2.27	A	1.21	B	-1.16	B	-1.63
B	2.24	A	1.20	B	-1.17	B	-1.64
A	2.12	A	1.19	B	-1.19	B	-1.71
A	2.07	A	1.16	A	-1.20	B	-1.84
A	2.02	B	1.16	B	-1.21	B	-1.87
A	1.87	B	1.15	A	-1.25	B	-1.91
A	1.83	A	1.11	B	-1.28	B	-1.91
B	1.72	B	1.10	A	-1.29	B	-1.95
A	1.65	A	1.09	A	-1.30	B	-2.04
A	1.61	B	1.08	A	-1.31	B	-2.17
B	1.53	A	1.02	B	-1.31	B	-2.19
A	1.53	A	1.01	B	-1.36	B	-2.31
A	1.48	A	1.01	A	-1.38		
A	1.47			B	-1.40		
A	1.44			B	-1.40		
				B	-1.43		
				B	-1.43		

Note: 1. Scores listed are those with $\bar{r} \geq 1$.

2. A = Teachers from District A.
B = Teachers from District B.

the total variance as compared to components 1 and 3, and component 3 has the largest vector weight in the component set. This would suggest that the most important variables in this pattern describe high structural properties and individuals who are bright, independent and highly anxious. In reviewing the ordering of scores, the preponderance of high scores were attributed to teachers from District A which was observed as being more traditional and more bureaucratic than District B. Of the forty-five high scores which were one or more standard deviations from the mean, thirty-eight were attributed to District A Teachers.

At the lower end of the scale, thirty-three of the forty-three low scores were attributed to teachers from District B. These scores were also one or more standard deviations from the mean. Therefore, it can be observed that teachers from the smaller, less bureaucratic district perceived organizational structures as being low and were individuals whose personalities reflect low-anxiety, sober, dependent behavior.

In the second canonical function (TABLE 10) components 2 and 4 were associated with high weights. Component 2 was identified as the acting-out component and component 4 has been described earlier. However, in Canonical Function II, the weight associated with component 4 is negative (-.315), suggesting organizational structures that do not provide for autonomous behavior, and individuals who are dependent, apprehensive, conservative, concrete and practical. In relation to high and low scores, these patterns appear as follows in diagramatic form in TABLE 13.

The distribution of the respondents' canonical Z scores obtained according to the weights associated with Canonical Function II are presented in TABLE 14. They are ordered from high to low. In considering the high scores which are one or more standard deviations from the mean, they are almost equally divided in respect to the districts represented. Twenty-three respondents are from District A and twenty respondents from District B. Therefore, both districts exhibit the characteristics listed under High Scores in TABLE 14. However, in reviewing the scores at the low end of the continuum; thirty-two of the respondents are from District A. This suggests that there is less acting out taking place on the part of the teachers in the larger district. The perception of more autonomous structures in District A appears to contradict the findings established in Canonical Function I; but once again, the reader is reminded that of all the structural components associated with significant canonical weights, this component accounted for the least amount of total variance, and within the component, the majority of the component variance was attributed to personality variables.

Therefore, the patterns that emerge suggest that in the smaller, less bureaucratic, innovative and experimenting District B, a

TABLE 12

Patterns Identified in Canonical Function I

Low Scores	High Scores
1 Low Anxiety	1 High Anxiety
3 Low Structure Behavior: Sober Trusting	3 High Structure Behavior: Enthusiastic Self-opinionated Realistic
4 Non-Autonomous Structures Behavior: Dependent Apprehensive Conservative Concrete Practical	4 Autonomous Structures Behavior: Independent Confident Imaginative Bright

TABLE 13

Patterns Identified in Canonical Function II

Low Scores		High Scores	
2	Authentic Behavior	2	Acting-out Behavior
4	Autonomous Structure Behavior: Independent Confident Imaginative Bright	4	Non-Autonomous Structure Behavior: Dependent Apprehensive Conservative Concrete Practical

TABLE 14

Canonical Z Scores of Respondents
Associated with Canonical Function II

High Scores				Low Scores			
A	2.75	B	1.67	A	-1.00	A	-1.51
B	2.63	B	1.60	B	-1.03	A	-1.51
B	2.62	A	1.57	B	-1.03	B	-1.52
A	2.61	B	1.54	A	-1.04	A	-1.54
A	2.46	A	1.52	A	-1.08	A	-1.56
A	2.20	B	1.52	A	-1.10	A	-1.74
B	2.09	A	1.49	B	-1.12	A	-1.76
B	2.08	A	1.44	A	-1.13	A	-1.80
B	1.99	A	1.27	A	-1.14	A	-1.83
B	1.87	B	1.22	A	-1.16	A	-1.87
A	1.82	A	1.22	A	-1.18	A	-2.01
B	1.82	B	1.17	B	-1.19	A	-2.03
B	1.81	B	1.16	A	-1.20	A	-2.03
B	1.79	A	1.16	A	-1.26	A	-2.11
A	1.78	A	1.15	B	-1.27	A	-2.14
B	1.78	A	1.13	A	-1.28	A	-2.33
A	1.76	A	1.11	A	-1.33	A	-2.39
B	1.73	B	1.10	A	-1.36	A	-2.51
A	1.73	A	1.08	B	-1.37	A	-2.60
B	1.72	A	1.08	B	-1.43		
A	1.70	A	1.07	A	-1.45		
		A	1.03				

Note: 1. Scores listed are those with $\sigma \geq 1$.

2. A = Teachers from District A.
B = Teachers from District B.

preponderance of teachers exhibit low anxiety, perceive low organizational structure, are more dependent, conservative, trusting types who are acting-out their roles. In the larger, traditional and more bureaucratic District A, the teachers perceive high organizational structures, are more independent, opinionated, brighter individuals who also tend to reveal a higher degree of anxiety.

Summary

The data were collected through the administration of the OCDQ, the 16-P.F. and SPQ. Statistical treatment was based on mean raw subtest scores. The 16-P.F. scores and the four SPQ scores were intercorrelated forming a 20 x 20 correlation matrix. Twenty principal components were then obtained by factor analyzing the matrix. Six of these components secured eigenvalues ≥ 1 and were analyzed. The six components accounted for 52.33% of the total variance. Personality variables were primarily responsible for component variance in components 1, 2, and 5. Components 3, 4, and 6 revealed loadings of sufficient weight from both personality and structure variables demonstrating an area of overlap.

The relationship between the 20 components and the eight subtests comprising the organizational climate profile was determined by subjecting both sets of scores to Canonical Analysis.

In the canonical correlation analysis between the 20 components and the 8 subtests comprising the climate profile, a chi square test of successive latent roots was performed. The first two canonical correlations proved to be significant beyond the .001 level and were therefore included in this analysis since the 2 latent roots and the corresponding canonical correlations were of statistical importance ($p < .001$) and interpretive interest.

The vector weights of seven components and six subtests of the climate profiles, as evidenced in Canonical Functions I and II, demonstrated a relationship between structural properties and personality characteristics and organizational climate. An examination of the loadings of the vector weights which maximized the significant canonical functions revealed that the largest single vector weight related to the climate subtest score was associated with component 3 in which the component variance was attributed to the personality variables interacting with structural property variables.

Therefore, the personality in interaction with perceived structure was related to the organizational climate, thereby supporting the major hypothesis of this study.

CONCLUSIONS AND RECOMMENDATIONS

The concept of organizational climate was presented as a distinct and unique level of analysis in which climate was defined in terms of organizational behavior that reflected the ability of individuals to accommodate the interrelationships resulting among the dimensions of formal organizational structures and the personality factors of the individuals inhabiting the organization. The role expectations of the organization were viewed as being defined by the structural properties of the organization; and that this particular dimension was independent of, and interactive with, the organization participant's personality, as indicated in specific behavior responses to given need dispositions.

These conceptualizations were supported by the theoretical construct of social systems theory which defined behavior in terms of the resultant interaction between nomothetic and idiographic dimensions which were described as being independent and phenomenally interactive. The Getzels-Guba Model of Social Behavior[121] was modified and the interaction process among the variables concerned with this study were expressed as C = f (S x P). This interaction model proposed that the organizational climate of an elementary school (C) can be defined as a function (f) of the interaction that results between the role expectations inherent in the structural properties of the organization (S) and certain personality characteristics of the organization members (P). Thus, the elementary teacher's perception of the organizational climate of the school is influenced by the degree to which his personality is compatible with his institutional role.

The basic hypothesis predicted that the organizational climate of elementary schools as perceived by teachers is a function of the interaction that occurs between the teachers' perception of the organization's structural properties and certain personality characteristics of teachers.

A sample of two hundred and ninety-six teachers was selected from fifteen elementary schools located in two unified school districts in Southern California. Elementary teachers were identified as the unit of analysis in this study. In order to measure the structural properties of the schools concerned, it was necessary to construct the Structural Properties Questionnaire (SPQ). The SPQ was then administered to the sample and the responses were subjected to a four-factor varimax rotational analysis to identify

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121 J. W. Getzels, "Administration as a Social Process," found in A. W. Halpin, ed., Administrative Theory in Education (New York: The Macmillan Co., 1967), p. 155.

the unities or fundamental properties underlying the measures. Formalization, complexity and centralization properties survived the analysis. A fourth factor was identified as a measure of autonomous structures. The alpha coefficient of internal consistency was used to derive an estimate of reliability of the thirty-eight items identified by factor analysis. Content validity was the basis for establishing the validity of the instrument.

Data collection was achieved through the administration of the OCDQ,[122] the SPQ,[123] and the 16-P.F.[124]

Using principal component analysis, the structural and personality variables were combined in order to identify sources of variance that were attributed to structural components; personality components; or interaction components composed of both structural and personality variables. By identifying the components variance contributed by the structural and personality variables, it was then possible to test the hypothesis by subjecting the set of component scores and the set of climate profile scores to canonical correlation analysis. The resulting canonical correlation coefficients revealed the maximum relationship between the two sets of variables, and the relative sizes of the elements of the vector of weights identified the variables which contributed the most to the relationships demonstrated by the canonical correlations.

The first six components secured eigenvalues equal to, and greater than one, and were therefore significant for analysis. Three of these components revealed loadings of sufficient weight from both the personality set and the structural properties set, demonstrating an area of overlap between the domains of perceived structure and personality. The remaining three components, by the loadings associated with the variables, revealed that the personality set was the primary source of component variance. Two of these "personality" components contained patterns of personality traits that have been identified by Cattell's second-order factors as measuring anxiety and an acting-out characteristic which is similar to inauthentic behavior.

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122 A. W. Halpin and D. B. Croft, The Organizational Climate of Schools (Chicago, Midwest Administration Center, University of Chicago, 1963).

123 The SPQ was developed by L. K. Bishop, M. Murphy and J. R. George at the Claremont Graduate School, Claremont, California, 1968.

124 R. B. Cattell and H. W. Eber, Handbook for the Sixteen Personality Factor Questionnaire (Champaign, Illinois: The Institute for Personality and Ability Testing, 1964).

In the canonical correlation analysis between the components and the eight subtests of the organizational climate profile, a chi square test of successive latent roots was performed and the first two canonical correlations proved to be significant beyond the .011 level. In the first canonical function, the climate subtests identified as consideration, productivity and intimacy were significantly related to three components. Two of these components were associated with both personality and structure variables while the third was primarily a personality component. In the second canonical function, four climate subtests identified as hindrance, esprit, intimacy and disengagement were best related to four components. The variance in three of these components was shared by both personality and structure variables and the remaining component was primarily a personality component.

Five of the seven components related to the climate profile subtests were those in which the variance was shared by both personality and structural property variables.

First a consideration of certain limitations in this research is necessary. Obviously, any conclusions reached cannot be generalized beyond the population represented by the sample. The data were used to estimate relationships among the variables as measured by the instruments selected for the study and for analyzing internal relationships within the sample. The sample represents elementary teachers in two unified school districts in Southern California and the findings are limited to these boundaries.

Questions of validation were raised throughout the study. Judgment about the SPQ was based on assessment of content validity. Additional criterion study is needed. One approach could be to send a team of organizational theorists into a sample of elementary schools. Their task would be to do a case study of each of the schools, describing the structural properties on the basis of the characteristics reflected in the SPQ. The SPQ would then be administered to the elementary teachers in these schools and a team of qualified judges would be selected and requested to perform a blind matching between the case reports and the SPQ results.[125]

The validity of the OCDQ is also a matter of question. As Halpin and Croft have indicated, their original inquiry did not concern itself with the relationship between the OCDQ and external criteria and they have encouraged others to cross-validate the OCDQ by

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[125] This study is similarly described by Halpin and Croft. See The Organizational Climate of Schools (Chicago: Midwest Administration Center, 1963), p. 83.

factoring similar data from independent and larger samples of schools.[126] Many studies have been conducted since Halpin and Croft first introduced the OCDQ and the question of what this instrument actually measures appear to be best answered in the content of the eight subtests. Data were analyzed in this study accordingly.

Of the three instruments employed in this study, the 16-P.F. was considered to be most valid. It was well designed, widely used and properly validated with respect to primary personality factors deeply rooted in general psychological research. Unlike many inventories of this nature, personality factors were measured on the basis of known correlations between "mental interiors" found in the questionnaire factors and factors well established in behavior.

Assuming that the instruments measured those characteristics derived from the theoretical framework, the resulting findings did support the major theme of this study. In terms of the social systems model, the behavior of an individual was perceived as the resultant effect of an individual interacting with environmental expectations structured by the institution. The prediction was established that organizational climate is a function of the interaction between teachers' perceptions of organizational structure and certain personality traits of the teachers.

The interaction effect was demonstrated in the principal component analysis by three of the six components which were considered significant for analysis. These components represented an interplay between the social system's nomothetic and the idiographic dimensions. The canonical correlations between the components and the climate profile subtests provided the evidence. The strongest relationships were evidenced between the climate subtests and those components in which the variance was shared by contributions from both personality and structural property variables. Also, it was noted that the largest single vector weight (.641) was associated with a component in which the component variance was equally shared by both structural and personality variables. These findings reflect the assumptions proposed by the social system theory that the strongest relationships were evidenced between the observed behavior of organizational participants (climate subtests) and the resultant product of an individual interacting with environmental expectations as structured by the institution (represented by components demonstrating the interaction between structure and personality variables).

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126 Ibid., p. 82.

In the first canonical function, the components most closely related to the climate profile subtests indicate that the personalities of the teachers reflected enthusiastic, self-opinionated, independent individuals who perceived the organizational structure as being more formal, centralized and complex in comparison to autonomous structures. A high degree of anxiety was evidenced and the loadings on the climate profile subtests tended towards a profile suggesting a closed climate.

In the second canonical function, the components most closely related to the climate profile subtests indicate that the personalities of the teachers reflected dependent, conservative, concrete and practical individuals who perceived the organizational structure as being non-autonomous. The high vector weight associated with component 2 was indicative of an acting-out behavior on the part of the teachers, indicating that they were "going through the motions" and were not authentic in their behavior. These behaviors and perceptions of structure were closely related to climate subtests that tended towards closedness.

In the two patterns described, distinctly different groups of teachers of varying personality characteristics view the climate subtests in terms tending toward closedness and, associated with these characteristics are indications of high anxiety and "acting-out" behaviors.

One possible explanation for this pattern and its relationship to organizational climate is the consideration that the type of climate perceived is influenced by the degree of compatibility that exists between the interacting variables. Once again, this notion raises the question as to what does the OCDQ measure? If the contention is true that compatibility is an influential factor affecting the teachers' perceptions of climate, then, organizational climate, as measured by the OCDQ, is not necessarily a valid indicator of the effectiveness of schools. Halpin did not investigate the relationship between the profile scores on the OCDQ and external criteria of a school's effectiveness but he suggests the possibility that the climate profiles may constitute a better criterion of the effectiveness of schools than many existing measures.[127] Until the issue of compatibility is settled, the use of the OCDQ in measuring effectiveness is highly in question. It is entirely possible that an open climate may actually be indicative of an ineffective school wherein poor teaching occurs in a structural setting that is compatible with the need dispositions of an ineffective staff.

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127 Ibid., p. 82.

This viewpoint also raises questions regarding the effect of personality upon climate. Halpin[128] suggested that personality characteristics of teachers might very well be responsible for predisposing them to modes of behavior that characterize climate. Halpin posited that teachers who reflect characteristics similar to the model types described in the studies by Guba, Jackson, Bidwell[129] and Ryans[130] are types who are more likely to facilitate closedness in the Organizational Climate of their schools. These characteristics were identified in these studies as fitting the cultural stereotypes of the teacher: sexually impotent, obsequious, socially inept, externally patient and painstakingly demanding individuals.

The findings of this study suggest that Halpin's "hunch" regarding personality was "on target" but his contention that personality factors alone can serve as predictors is not verified. It is apparent that climate, as perceived by the teachers in the sample of this study, may be dependent upon the degree of compatibility that exists between the need dispositions of an individual and the organization's role expectations. Further investigation along this line of inquiry is necessary in order to answer certain questions: What factors were responsible for the high anxiety and the acting-out behavior? Were these the direct result of conflict between the need dispositions of the teachers and the role expectations as defined by the institutions? Does the absence of conflict between these two dimensions result in the perception of open climates? And does the converse of this hold true? When need dispositions and role expectations are not congruent, can it be predicted that the participants concerned will perceive the climate as being closed?

In conclusion, the findings of this study did support the conceptualization that teachers' perceptions of the structural properties of their schools, in interaction with certain personality characteristics of the teachers is related to their perceptions of organizational climate. The resulting relationships provided a basis for considering the compatibility of personality characteristics in a structural setting as a possible predictor of organizational climate.

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128 A. W. Halpin, Theory and Research in Administration (New York: The Macmillan Co., 1966), p. 233.

129 E. G. Guba, et al., "Occupational Choice and the Teaching Career," Educational Research Bulletin, 38, No. 1 (January, 1959), pp. 1-3.

130 D. G. Ryans, Characteristics of Teachers: Their Description, Comparison and Appraisal (Washington, D. C.: American Council on Education, 1960).

Essentially this study took the social systems theory into a new, for it, aspect of organization. The theory was expanded to accommodate structural properties as operational definitions of institutional expectations. The results of this theoretical and empirical excursion is that administrators could watch well organizational climate as determined by the compatibility of individual personality and organizational structure.

These considerations are especially relevant at a time when more than ever before, the very foundations of o r traditional approach to formal schooling are being questioned. The structure and function of public educational institutions are under scrutiny and increasing emphasis is being placed upon innovation and change--change in methods, in organizational design and in basic concepts which have shaped these institutions in the past.

Those who are considering the adoption of innovative practices which relate to organizational structures, cannot ignore the effect of these changes upon the organizational participant. Too often educators have witnessed the failure of "new approaches" because they failed to anticipate, and to prepare for the consequences of injecting a "foreign protein" into the organizational body. As Argyris has advised, a greater understanding of the "buzzing confusion of simultaneously existing, multilevel, mutual interacting variables"[131] is essential in the study of organizational behavior.

The intent of this investigation was to attempt to view organizational behavior as a discrete level of analysis which considered many variables from several levels, interacting with each other simultaneously. The findings should contribute to a better understanding of the organizational behavior of teachers, and that it will also serve to encourage others to guide analysis of organizational phenomena, such as structures, as they affect individual behavior.

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131 C. Argyris, "Some Problems in Conceptualizing Organizational Climate: A Case Study of a Bank," Administrative Science Quarterly, Vol. 2 (June-March, 1957-58), p. 501.

APPENDIX A

QUESTIONNAIRES

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ORGANIZATIONAL CLIMATE DESCRIPTION QUESTIONNAIRE

A. W. Halpin and D. B. Croft

The items in this questionnaire describe typical behaviors or conditions that occur within a school organization. Please indicate to what extent each of these descriptions characterizes your school. Please do not evaluate the items in terms of "good" or "bad" behavior, but read each item carefully and respond in terms of how well the statement describes your school.

The purpose of this questionnaire is to secure a description of the different ways in which teachers behave and of the various conditions under which they work. The questionnaire will be examined to identify the behaviors or conditions that have been described as typical by the majority of the teachers in your school. From this examination, a portrait of the Organizational Climate of your school will be constructed.

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MARKING INSTRUCTIONS

Printed below is an example of a typical item found in the Organizational Climate Description Questionnaire:

1. Rarely occurs
2. Sometimes occurs
3. Often occurs
4. Very frequently occurs

SAMPLE:

Teachers call each other by their first names. 1 2 (3) 4

In this example the respondent circled alternative 3 to show that the inter-personal relationship described by this item "often occurs" at his school. Of course, any of the other alternatives could be selected, depending upon how often the behavior described by the item does, indeed, occur in your school.

Please mark your responses clearly, as in the example. PLEASE BE SURE THAT YOU MARK EVERY ITEM. CIRCLE the numeral which most nearly approximates the frequency of the behavior described...Authenticity of the response is very important. Do give the most accurate response that you can...Either a pencil or a pen may be used.

BIOGRAPHICAL INFORMATION

Please place a check mark to the right of the appropriate category.

8.	Position:	Principal	1.____
		Teacher	2.____
		Other	3.____
9.	Sex:	Man	1.____
		Woman	2.____
10.	Age:	20-29	1.____
		30-39	2.____
		40-49	3.____
		50-59	4.____
		60 or over	5.____
11.	Years of experience in education:	0-3	1.____
		4-9	2.____
		10-19	3.____
		20-29	4.____
		30 or over	5.____
12.	Years at this school:	0-3	1.____
		4-9	2.____
		10-19	3.____
		20 or over	4.____

1. Rarely occurs
2. Sometimes occurs
3. Often occurs
4. Very frequently occurs

13.	Teachers' closest friends are other faculty members at this school.	1 2 3 4
14.	The mannerisms of teachers at this school are annoying.	1 2 3 4
15.	Teachers spend time after school with students who have individual problems.	1 2 3 4
16.	Instructions for the operation of teaching aids are available.	1 2 3 4
17.	Teachers invite other faculty to visit them at home.	1 2 3 4
18.	There is a minority group of teachers who always oppose the majority.	1 2 3 4
19.	Extra books are available for classroom use.	1 2 3 4
20.	Sufficient time is given to prepare administrative reports.	1 2 3 4
21.	Teachers know the family background of other faculty members.	1 2 3 4
22.	Teachers exert group pressure on non-conforming faculty members.	1 2 3 4
23.	In faculty meetings, there is a feeling of "let's get things done."	1 2 3 4
24.	Administrative paper work is burdensome at this school.	1 2 3 4
25.	Teachers talk about their personal life to other faculty members.	1 2 3 4
26.	Teachers seek special favors from the principal.	1 2 3 4
27.	School supplies are readily available for use in classwork.	1 2 3 4
28.	Student progress reports require too much work.	1 2 3 4
29.	Teachers have fun socializing together during school time.	1 2 3 4

30.	Teachers interrupt other faculty members who are talking in staff meetings.	1 2 3 4
31.	Most of the teachers here accept the faults of their colleagues.	1 2 3 4
32.	Teachers have too many committee requirements.	1 2 3 4
33.	There is considerable laughter when teachers gather informally.	1 2 3 4
34.	Teachers ask nonsensical questions in faculty meetings.	1 2 3 4
35.	Custodial service is available when needed.	1 2 3 4
36.	Routine duties interfere with the job of teaching.	1 2 3 4
37.	Teachers prepare administrative reports by themselves.	1 2 3 4
38.	Teachers ramble when they talk in faculty meetings.	1 2 3 4
39.	Teachers at this school show much school spirit.	1 2 3 4
40.	The principal goes out of his way to help teachers.	1 2 3 4
41.	The principal helps teachers solve personal problems.	1 2 3 4
42.	Teachers at this school stay by themselves.	1 2 3 4
43.	The teachers accomplish their work with great vim, vigor and pleasure.	1 2 3 4
44.	The principal does personal favors for teachers.	1 2 3 4
45.	The principal sets an example by working hard himself.	1 2 3 4
46.	Teachers eat lunch by themselves in their own classrooms.	1 2 3 4
47.	The morale of the teachers is high.	1 2 3 4
48.	The principal uses constructive criticism.	1 2 3 4
49.	The principal stays after school to help teachers finish their work.	1 2 3 4

1. Rarely occurs
2. Sometimes occurs
3. Often occurs
4. Very frequently occurs

50.	Teachers socialize together in small select groups.	1 2 3 4
51.	The principal makes all class-scheduling decisions.	1 2 3 4
52.	Teachers are contacted by the principal each day.	1 2 3 4
53.	The principal is well prepared when he speaks at school functions.	1 2 3 4
54.	The principal helps staff members settle minor differences.	1 2 3 4
55.	The principal schedules the work for the teachers.	1 2 3 4
56.	Teachers leave the grounds during the school day.	1 2 3 4
57.	The principal criticizes a specific act rather than a staff member.	1 2 3 4
58.	Teachers help select which courses will be taught.	1 2 3 4
59.	The principal corrects teachers' mistakes.	1 2 3 4
60.	The principal talks a great deal.	1 2 3 4
61.	The principal explains his reasons for criticism to teachers.	1 2 3 4
62.	The principal tries to get better salaries for teachers.	1 2 3 4
63.	Extra duty for teachers is posted conspicuously.	1 2 3 4
64.	The rules set by the principal are never questioned.	1 2 3 4
65.	The principal looks out for the personal welfare of teachers.	1 2 3 4
66.	School secretarial service is available for teachers' use.	1 2 3 4
67.	The principal runs the faculty meeting like a business conference.	1 2 3 4
68.	The principal is in the building before teachers arrive.	1 2 3 4

1. Rarely occurs
2. Sometimes occurs
3. Often occurs
4. Very frequently occurs

69.	Teachers work together preparing administrative reports.	1 2 3 4
70.	Faculty meetings are organized according to a tight agenda.	1 2 3 4
71.	Faculty meetings are mainly principal-report meetings.	1 2 3 4
72.	The principal tells teachers of new ideas he has run across.	1 2 3 4
73.	Teachers talk about leaving the school system.	1 2 3 4
74.	The principal checks the subject-matter ability of teachers.	1 2 3 4
75.	The principal is easy to understand.	1 2 3 4
76.	Teachers are informed of the results of a supervisor's visit.	1 2 3 4
77.	Grading practices are standardized at this school.	1 2 3 4
78.	The principal insures that teachers work to their full capacity.	1 2 3 4
79.	Teachers leave the building as soon as possible at day's end.	1 2 3 4
80.	The principal clarifies wrong ideas a teacher may have.	1 2 3 4

16 P. F.

WHAT TO DO: The questions inside this booklet are to give you a chance to say what sort of a person you are and to state your interests and attitudes. Since each person is different, there are generally no "right" or "wrong" answers, but only what is true for you.

If a separate "Answer Sheet" has <u>not</u> been given to you, turn this booklet over and tear off the Answer Sheet on the back page.

Write your name and other particulars at the top of the Answer Sheet.

We first give you two examples so that you will know exactly what to do. To the right of each sentence there are three answers indicated. Look at the top left hand side of your Answer Sheet where it says "Examples." Although you are to read the questions in <u>this</u> booklet, <u>you must put your answers on the Answer Sheet</u>, alongside the same number as in the booklet.

Read the following examples and mark an x for your answers on the Answer Sheet:

EXAMPLES:

1. I find it hard to wake up quickly in the morning. ..... Yes (true) | In Between (or not sure) | No (false)

2. I would rather spend an evening:
   a. listening to good music;
   b. reading an exciting story..... a | Uncertain (of either) | b

Inside you will find more questions like these. When you are told to turn the page, begin with number 1 and go on at your own rate. In answering these questions we would like you to keep these four points in mind:

1. Answer the questions as frankly and truthfully as possible since there is no advantage in giving the wrong impression. Never give an untrue answer about yourself because you think it is the "right thing to say." There are ways of detecting such unfair answers.

2. Although this is an untimed test, we would still like you to answer the questions as quickly as you can. Do not spend time puzzling over the questions. Give the first, natural answer as it comes to you. Some questions are a bit similar to others but no two are exactly alike and your answers will often differ in these cases.

3. Use the middle answer <u>only</u> when it is <u>absolutely impossible</u> to lean toward one or the other of the answer choices. In other words, the "Yes" (or "a") or the "No" (or "b") answer should be used for <u>most</u> cases.

4. Do not skip any questions. Occasionally a statement may not seem to apply to you or your interests, but answer <u>every one</u>, somehow. Your answers will be kept confidential.

---------- DO NOT START UNTIL TOLD TO DO SO ----------

1. I think my memory is better than it ever was.....	Yes, true	In Between, not sure	No, false
2. I could happily live alone, far from anyone, like a hermit.....	Yes	Occasionally	No
3. If I say the sky is "down" and winter is "hot" I would call a criminal: (a) a gangster, (b) a saint, (c) a cloud.....	a	b	c
4. When I see "sloppy", untidy people I: (a) just accept it, (b) get disgusted and annoyed.....	a	In Between	b
5. It annoys me to hear people say they can do something better than others..	Yes	Occasionally	No
6. At a party I let others keep the jokes and stories going.....	Yes	Sometimes	No
7. If my income were more than enough for ordinary daily needs, I would feel I should give the rest to a church or other worthwhile cause.....	Yes	In Between	No
8. Most people I see at a party are undoubtedly glad to meet me.....	Yes	Sometimes	No
9. I would rather exercise by: (a) fencing and dancing, (b) wrestling and baseball.....	a	In Between	b
10. I smile to myself at the big difference between what people do and what they say they do.....	Yes	Occasionally	No

11. As a child I felt sad to leave home to go to school each day..... Yes Occasionally No

12. If a good remark of mine is passed by, I:
(a) let it go,
(b) give people a chance to hear it again..... a In Between b

13. When someone has bad manners I feel:
(a) it is not my business,
(b) I should show the person that people disapprove..... a In Between b

14. When I meet a new person I would rather:
(a) discuss his politics and social views,
(b) have him tell me some good, new jokes..... a In Between b

15. When I plan something, I like to do so quite alone, without <u>any</u> outside help..... Yes Occasionally No

16. I avoid spending time dreaming about "what might have been."..... Yes Sometimes No

17. When I am going to catch a train, I get a little hurried, tanse, or anxious though I know I have time..... Yes Sometimes No

18. I have sometimes, even if briefly, had hateful feelings towards my parents.. Yes In Between No

19. I could be happy in a job that required me to listen to unpleasant complaints all day from employees and customers..... Yes In Between No

20. I think the opposite of the opposite of "inexact" is:
(a) casual, (b) accurate, (c) rough.. a b c

21. I always have lots of energy at times when I need it..... Yes In Between No

22. I'd be extremely embarrassed to tell people I'd spent my vacation at a nudist camp..... Yes In Between No

23. I greatly enjoy all large gatherings, like parties or dances..... Yes Sometimes No

24. I feel that:
(a) some jobs just do not need doing so carefully as others,
(b) any job should be done thoroughly if you do it at all..... a In Between b

25. In streets or stores I dislike the way some people stare at one..... Yes In Between No

26. I would rather be:
(a) a bishop, (b) a colonel a In Between b

27. If a neighbor cheats me over small things, I would rather humor him than show him up..... Yes Occasionally No

28. I would rather see:
(a) a good movie of hardy, pioneering days,
(b) a clever movie farce or skit on the society of tomorrow..... a In Between b

29. When I have been put in charge of a thing I insist that my instructions are followed or else I resign..... Yes Sometimes No

30. I find it wise to avoid excessive excitement because it tends to wear me out... Yes Occasionally No

31. If I were good at both I would rather play at:
(a) chess, (b) bowling..... a In Between b

32. I feel it is cruel to vaccinate very small children, even against contagious diseases, and parents have a right to stop it.... Yes In Between No

33. I put my faith more in:
(a) insurance, (b) good fortune..... a In Between b

34. I can forget my worries and responsibilities whenever I need to..... Yes Sometimes No

35. I find it hard to admit when I am wrong. Yes Sometimes No

36. In a factory I would rather be in charge of:
(a) machinery or keeping records,
(b) talking to and hiring new people... a In Between b

37.	Which word does not belong with the other two: (a) cat? (b) near? (c) sun?.....	a	b	c
38.	My health is affected by sudden changes, causing me to alter my plans for that reason.....	Yes	Occasionally	No
39.	I am quite happy to be waited on, at appropriate times, by personal servants.	Yes Often	Sometimes	No Never
40.	I feel a bit awkward in company and do not show up quite so well as I should.	Yes	Occasionally	No
41.	I think people should observe moral laws more strictly than they do.....	Yes	Sometimes	No
42.	Some things make me so angry that I find it best not to speak.....	Yes	In Between	No
43.	I can do hard physical work without feeling worn out as soon as most people.....	Yes	Sometimes	No
44.	I think most witnesses tell the truth even if it becomes embarrassing.....	Yes	In Between	No
45.	I find it helpful to pace up and down when I am thinking.....	Yes	Sometimes	No
46.	I think this country would do better to spend more on: (a) armaments, (b) education.....	a	In Between	b
47.	I would rather spend an evening: (a) in a hard game of cards, (b) looking at photos of past vacations.	a	In Between	b
48.	I would rather read: (a) a good historical novel, (b) an essay by a scientist on harnessing world resources.....	a	In Between	b
49.	There are really more nice people than objectionable people in the world.....	Yes	In Between	No
50.	I honestly think I am more planful, energetic, and ambitious than many perhaps equally successful people.....	Yes	Occasionally	No

51. There are times when I do not feel in the right mood to see anyone: (a) very rarely, (b) quite often..... a In Between b

52. When I know I'm doing the right thing I find my task easy..... Yes always Sometimes No seldom

53. I would rather be:
(a) in a business office organizing and seeing people,
(b) an architect, drawing plans in the back room..... a In Between b

54. Black is to gray as pain is to: (a) wound? (b) illness? (c) discomfort? a b c

55. I am always a sound sleeper, never walking or talking in my sleep..... Yes In Between No

56. I can look anyone in the eye and tell a lie with a straight face (if for a right end)..... Yes Occasionally No

57. I have been active in organizing a club, team, or social group..... Yes Occasionally No

58. I admire more:
(a) a clever but undependable man,
(b) an average man but strong to resist temptations..... a In Between b

59. When I make a just complaint I always get matters adjusted to my satisfaction.. Yes Sometimes No

60. Discouraging circumstances can bring me near to tears..... Yes Occasionally No

61. I think many foreign countries are actually more friendly than we suppose. Yes Sometimes No

62. There are times, every day, when I want to enjoy my own thoughts, uninterrupted by other people..... Yes In Between No

63. I get annoyed at being held up by small rules and regulations which, I admit, are really necessary..... Yes In Between No

64.	I think much so-called modern "progressive" education is less wise than the old rule "spare the rod and spoil the child.".....	Yes, True	Sometimes	No, False
65.	I learned more in school days by: (a) going to class, (b) reading a book.....	a	In Between	b
66.	I avoid getting involved in social responsibilities and organizations.	Yes, True	Sometimes	No, False
67.	When a problem gets hard and there is a lot to do, I try: (a) a different problem, (b) a different attack on the same problem..	a	In Between	b
68.	I get strong emotional moods--anxiety, anger, laughter, etc.--that seem to arise without much actual cause....	Yes	Occasionally	No
69.	My mind does not work as clearly at some times as at others.....	Yes, True	In Between	No, False
70.	I am happy to oblige people by making appointments at times they like, even if a bit inconvenient to me.....	Yes	Sometimes	No
71.	I think the proper number to continue the series 1, 2, 3, 6, 5, is: (a) 10, (b) 5, (c) 7.....	a	b	c
72.	I tend to be critical of other people's work.....	Yes	Occasionally	No
73.	I would rather do without something than put a waiter or waitress to a lot of extra trouble.....	Yes	Occasionally	No
74.	I love to travel--anytime.....	Yes	Occasionally	No
75.	I have sometimes come near to fainting, at a violent pain or the sight of blood.....	Yes	In Between	No
76.	I greatly enjoy talking to people about local problems.....	Yes	Sometimes	No

77.	I would rather be: (a) a construction engineer, (b) a teacher of social ideas and manners.....	a	In Between	b
78.	I have to stop myself from getting too involved in trying to straighten out other people's problems...	Yes	Sometimes	No
79.	I find the conversation of my neighbors dull and boring: (a) in most cases, (b) only in a very few.....	a	In Between	b
80.	I generally fail to notice hidden propaganda in what I read, unless someone points to it.....	Yes, True	Occasionally	No, False
81.	I think every story and movie should remind us of a moral.....	Yes	Sometimes	No
82.	More trouble arises from people: (a) changing and meddling with ways that are already O.K., (b) turning down new, promising methods.....	a	In Between	b
83.	I sometimes hesitate to use my own ideas, for fear they might be impractical.....	Yes	In Between	No
84.	Prim, strict people do not seem to get on well with me.....	Yes, True	Sometimes	No, False
85.	My memory does not change much from day to day.....	Yes, True	Sometimes	No, False
86.	I may be less considerate of other people than they are of me:.....	Yes, True	Occasionally	No, False
87.	I am more restrained than most people in saying what my feelings are.....	Yes	Sometimes	No
88.	If the two hands on a watch come together exactly every 65 minutes (according to an accurate watch), the watch is running: (a) slow, (b) on time, (c) fast..	a	b	c

89.	I get impatient, and begin to fume and fret, when people delay me unnecessarily.....	Yes	Occasionally	No
90.	People say that I like to have things done my own way.....	Yes, True	Occasionally	No, False
91.	I usually would say nothing if the tools given me to do a job are not quite what they should be.....	Yes, True	Sometimes	No, False
92.	At home, with a bit of spare time, I: (a) use it in chatting and relaxing, (b) plan to fill it with special jobs.....	a	In Between	b
93.	I am shy, and careful, about making friendships with new people.....	Yes	Occasionally	No
94.	I think that what people say in poetry could be put just as exactly in plain prose.....	Yes	Sometimes	No
95.	I suspect that people who act friendly to me can be disloyal behind my back: (a) yes, generally, (b) occasionally, (c) no, rarely.....	a	b	c
96.	I think that even the most dramatic experiences during the year leave my personality much the same as it was.	Yes	Sometimes	No
97.	I tend to speak rather slowly.....	Yes	Sometimes	No
98.	I get unreasonable fears or distastes for some things, for example, particular animals, places, and so on.....	Yes	Sometimes	No
99.	In a group task I would rather: (a) try improvements in organization, (b) keep the records and see that rules are kept.....	a	In Between	b

100.	To vote well on a social issue I would read: (a) a widely recommended novel about it, (b) a textbook listing statistical and other facts.....	a	In Between	b
101.	I get rather fantastic or ridiculous dreams (in sleep).....	Yes	Occasionally	No
102.	If left in a lonely house I tend, after a time, to feel a bit anxious or fearful.....	Yes	Sometimes	No
103.	I may deceive people by being friendly when I really dislike them.....	Yes	Sometimes	No
104.	Which word does not belong with the other two: (a) run? (b) see? (c) touch?	a	b	c
105.	If Mary's mother is Fred's father's sister, what relation is Fred to Mary's father: (a) cousin? (b) nephew? (c) uncle?	a	b	c

STRUCTURAL PROPERTIES QUESTIONNAIRE

The items in this questionnaire describe structural characteristics that may be present in your school. Please do not evaluate these characteristics in terms of being desirable or undesirable, but respond in terms of how accurately the statement describes your school.

MARKING INSTRUCTIONS

Printed below is an example of a typical item found in the questionnaire:

1. Rarely
2. Sometimes
3. Often
4. Very frequently

SAMPLE:

Teachers are required to maintain lesson plans. 1 2 3 (4)

In this example the respondent marked alternative 4 to indicate that most teachers in his school maintain lesson plans. Any of the other alternatives can be selected depending upon the behavior described by the item.

Please mark your response clearly. Please mark every item.

STRUCTURAL PROPERTIES QUESTIONNAIRE

1. Teachers
2. Department Chairmen
3. Consultants or Specialists
4. Administrators

(Circle one)

Who has the greatest influence in decisions about:

1.	The instructional program?	1	2	3	4
2.	Curricular offerings?	1	2	3	4
3.	Teaching methods?	1	2	3	4
4.	Textbooks?	1	2	3	4
5.	Pupil regulations?	1	2	3	4
6.	Teacher regulations?	1	2	3	4
7.	Hiring new staff?	1	2	3	4
8.	Promotion of professional staff?	1	2	3	4
9.	Adoption of new policies?	1	2	3	4
10.	Adoption of new programs?	1	2	3	4

---

1. Rarely occurs
2. Sometimes occurs
3. Often occurs
4. Very frequently occurs

11.	Teachers are required to go through channels (chain of command).	1	2	3	4
12.	Teaching in your district is a good job for someone who likes to be "his own boss."	1	2	3	4
13.	Teachers in your district must refer most non-routine decisions to someone higher up for a final O.K.	1	2	3	4
14.	In your district teachers have to follow procedures which conflict with their own professional judgment.	1	2	3	4

1. Rarely occurs
2. Sometimes occurs
3. Often occurs
4. Very frequently occurs

		(Circle one)
15.	Teachers are free to use any teaching techniques they think best.	1 2 3 4
16.	Teachers are free to discipline students as they see fit.	1 2 3 4
17.	Principals in your district must refer most non-routine decisions to someone higher up for a final O.K.	1 2 3 4
18.	Vice-principals and department chairmen in your district must refer most non-routine decisions to someone higher up for a final O.K.	1 2 3 4
19.	There can be little action taken here until a superior approves a decision.	1 2 3 4
20.	A person who wants to make his own decisions would be quickly discouraged here.	1 2 3 4
21.	Even small matters have to be referred to someone higher up for a final answer.	1 2 3 4
22.	Any decision I make has to have my superior's approval.	1 2 3 4
23.	Responsibilities and lines of authority within the formal chain of command are well defined.	1 2 3 4
24.	Teachers are required to maintain lesson plans.	1 2 3 4
25.	Teachers are required to follow an adopted course of study.	1 2 3 4
26.	Teachers are required to report to school or leave school at specific times.	1 2 3 4
27.	Teachers are required to sign in and sign out when coming or leaving school.	1 2 3 4
28.	Rules and regulations are uniformly applied.	1 2 3 4
29.	Uniform grading procedures are required.	1 2 3 4

1. Rarely occurs
2. Sometimes occurs
3. Often occurs
4. Very frequently occurs

		(Circle one)
30.	"Appropriate" teacher dress is prescribed by the school.	1 2 3 4
31.	Teachers are required to select textbooks from an approved textbook list.	1 2 3 4
32.	Rules and regulations govern teachers' decisions and actions.	1 2 3 4
33.	Rules and regulations govern administrative decisions and actions.	1 2 3 4
34.	Teachers are evaluated according to a formalized procedure.	1 2 3 4
35.	Teachers are required to follow suggested instructional sequences and unit plans as closely as possible.	1 2 3 4
36.	Teachers are allowed to teach only those subjects which are included in the course-of-study.	1 2 3 4
37.	Teachers are required to observe minimum time allotments for academic subjects.	1 2 3 4
38.	Teachers are required to submit lesson plans for review.	1 2 3 4
39.	Teachers are required to attend PTA meetings.	1 2 3 4
40.	Teachers at this school expect other teachers to be strict with students.	1 2 3 4
41.	At this school, procedures for disciplining students are well defined.	1 2 3 4
42.	Teachers at this school expect other teachers to teach a certain way.	1 2 3 4
43.	A person can make his own decisions without checking with anybody else.	1 2 3 4

1. Rarely occurs
2. Sometimes occurs
3. Often occurs
4. Very frequently occurs

		(Circle one)
44.	How things are done here is left up to the person doing the work.	1 2 3 4
45.	People here are allowed to do almost as they please.	1 2 3 4
46.	Most people here make their own rules on the job.	1 2 3 4
47.	The administration adheres to established rules and regulations in dealing with the teaching staff.	1 2 3 4
48.	Supervisors and/or administrators visit my classroom unannounced.	1 2 3 4
49.	The Principal is willing to by-pass regulations to help pupils.	1 2 3 4
50.	The Principal is willing to by-pass regulations to help teachers.	1 2 3 4
51.	Teachers in this school are closely supervised.	1 2 3 4
52.	The teachers are constantly being checked on for rule violations.	1 2 3 4
53.	People here feel as though they are constantly being watched to see that they obey all the rules.	1 2 3 4
54.	Teachers in this school are considered to be specialists in their respective fields.	1 2 3 4
55.	Academic degrees are an important consideration in recruiting of instructional staff.	1 2 3 4
56.	Academic degrees are an important consideration in recruiting of administrative staff.	1 2 3 4
57.	Advanced degrees are an important consideration in promotion.	1 2 3 4
58.	Teachers are required to attend teacher's institutes.	1 2 3 4

1. Rarely occurs
2. Sometimes occurs
3. Often occurs
4. Very frequently occurs

(Circle one)

59. To qualify for regular salary increases in your district, teachers are required to earn a specified minimum of college or in-service credits. 1 2 3 4

60. Teachers present papers at profession meetings and write articles for professional magazines. 1 2 3 4

61. Seniority is an important consideration for promotion. 1 2 3 4

62. Unusual teacher competence is rewarded by a meritorious salary adjustment. 1 2 3 4

63. Teachers are granted tenure solely on the basis of competence and demonstrated achievement. 1 2 3 4

64. Teachers are evaluated more on teaching methods than on the academic achievement of pupils. 1 2 3 4

65. Teachers are evaluated more on teaching methods than on staff relations. 1 2 3 4

66. Teachers are evaluated more on teaching methods than on classroom control and discipline. 1 2 3 4

67. Teachers are evaluated more on pupils' academic achievement than on staff relations. 1 2 3 4

68. Teachers are evaluated more on pupils' academic achievement than on classroom control and discipline. 1 2 3 4

69. Teachers are evaluated more on staff relations than on classroom control and discipline. 1 2 3 4

70. The positions listed below are frequently reflected in the organizational chart of most public schools. Please rank these positions numerically on the basis of the relative degree of prestige associated with each. The positions with the highest prestige is to be assigned the number 1, next highest 2, etc.

____ Department Chairmen
____ Classroom Teachers
____ Administrators
____ Specialists (Counselors, Psychologists, Speech Therapists, etc.)

APPENDIX B

THE STRUCTURAL PROPERTIES ITEM ANALYSIS RESULTS

TABLE		Page
15	Structural Properties Items, Scale (Factor) Assignments, Means, Sigmas, Correlations With Total Scale [R (Total)], And Correlations With Scale Sums [R (Scale)]	101

TABLE 15

ITEM ANALYSIS RESULTS OF THE
STRUCTURAL PROPERTIES

ITEM	SCALE	MEAN	SIGMA	R(TOTAL)	R(SCALE)
1	1	2.463	1.380	0.5467	0.5658
2	1	2.831	1.238	0.5112	0.5979
3	1	3.071	1.254	0.4372	0.5349
4	1	2.564	0.963	0.5723	0.5656
5	1	2.639	1.024	0.5675	0.6653
6	1	2.716	1.206	0.5591	0.6453
7	1	2.605	1.119	0.4293	0.5469
8	1	2.716	1.163	0.4657	0.5439
9	1	2.547	0.914	0.5785	0.5537
10	1	2.003	0.935	0.5972	0.6488
11	1	1.757	0.934	0.4770	0.4979
12	1	3.000	1.191	0.5919	0.7030
13	1	2.645	0.877	1.3841	1.4975
14	1	2.510	1.059	0.4425	0.5424
15	1	2.554	1.285	0.5296	0.6415
16	1	1.510	0.944	-0.2056	-0.2777
17	1	2.411	0.812	0.4156	0.2451
18	2	2.581	1.033	0.3872	9.6462
19	2	1.693	0.824	0.3999	0.5509
20	2	2.274	0.953	0.2902	0.6155
21	2	2.557	0.928	0.3814	0.6610
22	2	2.172	0.966	0.4997	0.7884
23	2	1.753	0.852	0.5748	0.7306
24	2	1.402	0.715	0.4700	0.6697
25	2	1.652	0.841	0.4089	0.6166
26	2	1.155	0.453	0.3411	0.4521
27	2	1.209	0.567	0.3275	0.4517
28	3	2.581	0.980	0.2300	0.7811
29	3	3.162	0.802	0.2220	0.7714
30	3	3.115	0.908	0.1145	0.7391
31	3	2.699	0.863	0.4478	0.4949
32	3	2.4820	0.952	0.4218	0.5213
33	4	2.416	0.889	0.3400	0.5974
34	4	2.821	0.903	0.4211	0.7211
35	4	3.020	0.822	0.3491	0.6311
36	4	2.784	0.912	0.2610	0.5750
37	4	2.855	0.887	0.2784	0.6104
38	4	1.946	0.782	-0.0763	0.1273

APPENDIX C

PRINCIPAL COMPONENT MATRIX

TABLE		Page
16	Principal Components for Sixteen Personality Variables and Four Perceived Structural Property Variables	103

TABLE 16

Principal Components for Sixteen Personality Variables and Four Perceived Structural Property Variables

S.P. Personality Factors	PRINCIPAL COMPONENTS																			
VARIABLE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
A	56	14	28	-30	-17	25	13	-02	26	05	02	06	-	-10	21	-13	-30	-30	-23	09
B	20	-	-28	43	09	38	-45	31	-05	08	-21	02	-13	-29	05	23	-	-11	-08	-01
C	65	-22	-06	10	-17	-10	17	04	-15	-30	05	30	-08	04	04	21	-08	-14	38	09
E	21	64	14	-04	03	-39	-18	-	-12	03	-	-12	09	08	-10	04	31	-43	-01	01
F	60	17	42	-20	-12	10	-20	02	10	-	-7	-16	12	-23	-10	-08	-01	15	23	-36
G	-25	-42	29	-10	19	23	30	38	06	-29	-13	-23	19	-17	-26	04	10	-15	04	11
H	73	01	12	-11	-08	03	06	10	14	18	04	-08	12	04	06	24	31	31	-08	27
I	-16	41	-35	04	-08	45	15	-21	20	-08	-02	37	37	05	-20	12	10	-03	-02	-09
L	-34	37	35	-21	-04	-17	20	17	-12	37	-07	20	-12	-20	-28	27	-22	06	02	03
M	04	55	03	37	-11	07	34	11	03	-35	23	02	-31	-22	-	-09	14	12	-17	-06
N	18	57	15	05	39	06	-25	-16	10	-30	-24	-06	-06	13	-17	-07	-23	16	07	22
O	-34	18	10	-36	30	04	-28	38	-09	-21	46	20	15	06	21	09	-04	05	-02	01
Q_1	30	33	-17	23	33	24	40	28	-12	22	05	-25	06	34	09	03	-16	-01	06	-14
Q_2	14	-09	07	38	50	-48	10	-05	23	13	04	15	32	-32	11	-08	-07	-	03	02
Q_3	19	-32	26	-18	60	08	06	-15	25	04	-	20	-37	12	-07	11	19	-08	-06	-16
Q_4	-54	38	-09	-20	09	22	14	-19	17	08	-04	-19	-13	-21	35	08	14	-05	31	09
I	-28	-08	62	25	-09	-10	04	-18	-	-25	-19	-11	16	08	24	40	-08	-02	-13	-14
II	-24	09	54	29	-18	05	-06	32	15	13	-26	32	-	20	16	-29	15	03	13	01
III	14	-02	43	13	22	35	06	-32	-63	09	08	11	08	-14	05	-14	10	01	-03	08
IV	-22	-13	36	50	-13	18	-16	-14	25	17	50	-13	04	09	-19	07	-07	10	09	12

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